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AN ARCHEOLOGICAL ASSESSMENT OF SEQUOIA AND KINGS CANYON NATIONAL PARKS, CALIFORNIA

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by
DAVID J. FEE

1980

Western Archeological Center
National Park Service
Tucson, AZ

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Chapter 1

INTRODUCTION

This archeological assessment is designed to facilitate archeological research, for the purpose of management needs or otherwise, in the Sequoia and Kings Canyon National Parks region (map 1). The intent is not to answer all the questions of prehistory concerning the parks nor to raise all the questions. Rather, it is merely a synthesis and evaluation of the state of knowledge concerning the prehistory of the parks. As such, it will enable archeologists to draw upon the previous research in a more efficient manner. Also, land managers will be in a better position to ensure the proper level of archeological research. This manuscript will assess the cultural resources of Sequoia and Kings Canyon National Parks, place them in a regional context, evaluate the previous archeological research conducted in the parks, and make recommendations concerning the future direction of such research.

Management and protection of cultural resources in our national parks is mandated by the 1906 Act for the Preservation of Antiquities, the 1935 Historic Sites Act, the 1966 National Historic Preservation Act, the 1969 National Environmental Policy Act, Executive Order 11593, and the 1979 Archeological Resources Protection Act. Increasing use of our national parks and monuments by the public has made proper management of these areas more complex. New projects to accommodate this increasing use are being initiated at a much quicker rate than before. This assessment is a first step toward gaining an overall perspective of the cultural resources of the parks that will give land managers further insight into what to expect in an area, and how these resources can best be managed. It will enable land managers to have a cultural resource background of the area and to consider these resources during the inception of a concept that will in any way alter the land surface. The assessment will give us a current synthesis of the archeological work conducted in the parks and shall identify various strengths and weaknesses in that work which will allow us to more prudently gauge our priorities.

Current state of knowledge concerning the prehistory of the Sequoia and Kings Canyon National Parks region is spotty at best. Most archeo-

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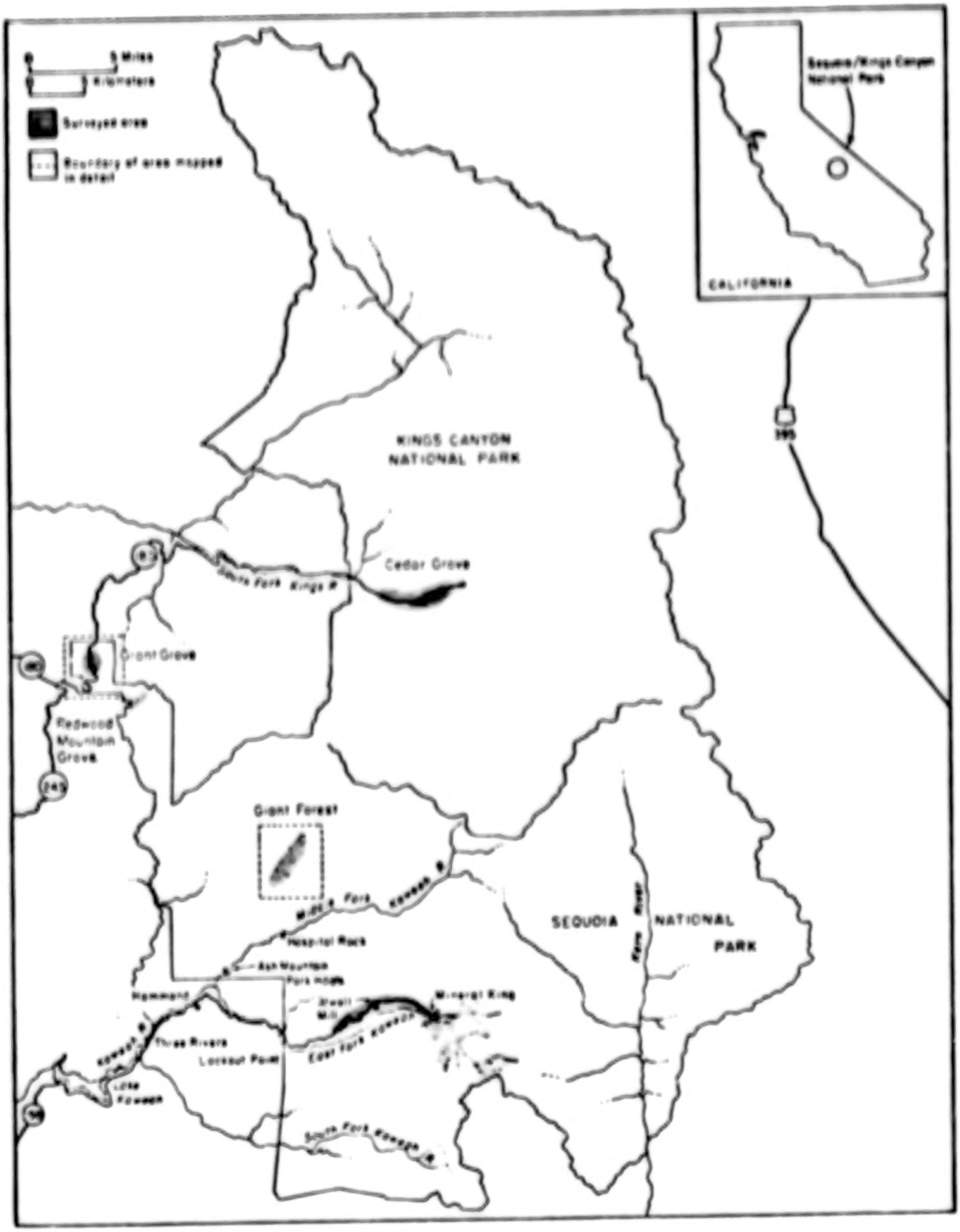


Map 1. Sequoia/Kings Canyon National Parks.

logical work conducted in the parks has been project specific, and widely dispersed. Consequently, surveys rarely build upon the previous work and often duplicate effort, which is both costly and inefficient. This assessment will attempt to bring this work together so that it may be used by future researchers. Because the archeological work has been project specific, we have an extreme bias in our knowledge of site types and their location. These problems are not unique to Sequoia and Kings Canyon National Parks. Due to the archeological clearance programs of various federal agencies, almost all federal land-holding agencies share these problems. Exceptions are the Bureau of Indian Affairs' land in California where total cultural resource inventories have now been completed, and a joint effort currently being conducted by the Forest Service and Bureau of Land Management in Arizona to inventory large tracts of their land. It is now being realized by federal agencies that these large surveys are much more cost-effective. It is very costly to send out an archeological crew to a park every time a project is being planned. Large-scale surveys give us much more information for our money, eliminate the need to resurvey areas, and reduce travel costs.

This assessment shall first discuss the natural environment of the parks following a format used by the Park Service, and illustrating the potential economic utility of various environmental zones. This will be succeeded by a brief account of the history of Anglo settlement in the region. Next there will be a discussion of the ethnographic inhabitants of the southern Sierra, including the settlement system, resource procurement system, and socio-economic interaction among the various groups that lived in the area during white contact. The section on prehistory attempts to integrate the work of various scholars conducted over a considerable time span throughout the region. A discussion and evaluation of the archeological work carried out within the parks follows. Finally, recommendations concerning the future direction of research are offered.

Chapter 2

THE ENVIRONMENT OF SEQUOIA AND KINGS CANYON NATIONAL PARKS

General

The following account concerning the environment of Sequoia and Kings Canyon National Parks is a summary from the Natural Resources Management Plan and Environmental Assessment (1976), unless otherwise specified.

Sequoia and Kings Canyon National Parks are located in the southern portion of the Sierra Nevada. The parks' 846,959 acres contain the highest mountain in the continental United States, the finest Giant Sequoia groves in existence, thousands of glacial lakes, deep glacier-cut valleys, and numerous high mountain meadows. Elevation of the craggy topography ranges from 1,500 ft. at the southwestern boundary to 14,495 ft. at the summit of Mt. Whitney.

Stream and glacial action has deeply eroded the land surface of the parks. The major drainages of Kings Canyon National Park are the south fork of the San Joaquin River and the middle and south forks of the Kings River. The western portion of Sequoia National Park is drained by all five tributaries (north, south, east, middle, and Marble forks) of the Kaweah River, while the Kern River drains the eastern portion of the park.

Throughout the higher portions of the two parks, thousands of alpine lakes can be found. The highest lake in the United States is Tulainyo Lake and is located just north of Mt. Whitney at an elevation of 12,865 ft. Some small glaciers still exist primarily in the northern part of Kings Canyon National Park near the Goddard Divide.

Geology

Granite, in various forms and textures, is the fundamental constituent of the great tilted block, which created the Sierra Nevada. Vast exposures of granite dominate major portions of both parks. It is the granite that provided suitable raw materials for use in grinding tools, such as metates, bedrock mortars, and pestles, by the prehistoric inhabitants of the parks.

Metamorphic rocks, such as quartzite, schist, and marble, are located in portions of the parks. At least 30 known caves exist within the metamorphic formation of the parks. There are no known sources of obsidian, one of the primary materials used by Indians in the manufacture of stone tools, within the parks (Purves 1975). According to Davis (1961: 20), however, the Owens Valley Paiute supplied obsidian to the Western Mono, the Tubatulabal, the Southern Valley Yokuts, Kings River Yokuts, and the Tule-Kaweah Yokuts--all ethnographic inhabitants of the parks and adjacent areas.

Soils

The soils of Sequoia-Kings Canyon National Parks, primarily granitic in origin, have formed in place by the disintegration and decomposition of the underlying parent rock and vary in depth from several feet, in limited low elevation areas on western slopes, to a very thin or nonexistent soil mantle at higher elevations.

Water

The eastern boundary of the parks lies along the major divide of the Sierra Nevada; hence, the drainages all flow to the west. The rivers and major tributaries are perennial, fed by glacially formed lakes, ground water discharge, and springs.

Climate

The great range in elevation and topography causes extreme variations in microclimatic conditions within the parks. Lower elevations are characterized by hot, dry summers and cool, clear winters. Above 5,000 ft., mild summers and snowy winters are the rule. Above 7,000 ft., however, summer night temperatures are often 20°F to 30°F. Ash Mountain Headquarters (elevation 1,700 ft.) has an average annual temperature of 63°F, with extremes of 114°F and 22°F having been recorded. Giant Forest (elevation 6,409 ft.) has had extreme temperatures of 91°F and 0°F.

Average annual rainfall ranges from 26 in. at the lower elevations to 44 in. at the higher elevations. Above 4,000 ft., most winter precipitation occurs as snow.

Two types of floods associated with precipitation occur within the parks:

(1) Snowmelt floods, characterized by large volumes of water distributed over a relatively long period of time, and

(2) Winter rain-on-snow floods, characterized by relatively small volumes of water but occurring in short periods of time.

Other precarious natural occurrences include rockslides and rockfalls of steep canyon walls, avalanches at higher elevations, and "Mono Winds" of gale velocity, which occur only seldom during the late summer or early fall.

Ecosystems

All of the general ecosystems, which characterize the parks, will be briefly touched upon.

> A great mass of evidence leads to the conclusion that, considering all of the several groups which lived on the slopes of the Sierra Nevada as a whole there was literally not so much as one square mile in the entire range which was unfamiliar to them. Wherever exploitable resources were, no matter what the altitude or other apparently discouraging factor, it seems that either archaeological or ethnographical evidence there points to seasonal occupation by Indians who lived part of the time on the lower slopes of the Sierra (Elsasser 1958: 31).

A variation of climate, soils, physiography, and elevation creates a rich diversification of ecosystems. These ecosystems are categorized primarily by dominant vegetation type and the elevational range in which they exist.

Oak-Woodland.

The oak-woodland ecosystem is mostly confined to the lower slopes along the western boundary of Sequoia National Park in the Kaweah watershed.

The primary trees are blue oak, interior live oak, and California buckeye while the pristine understory was dominated by perennial bunchgrasses interspersed with a variety of herbaceous flora.

This was probably the most important California floral zone for the Indians because it produced large quantities of acorns and grass seed and also because it provided both forage and browse for deer (Baumhoff 1978: 18).

All the ethnographic inhabitants of the southern Sierra Nevada were known to have utilized acorns from the blue oak, interior live oak, and black oak, as well as buckeyes from the California buckeye as food. Also, wild oats were eaten by many of the various groups.

Chaparral. This ecosystem may be found up to 5,000 ft. elevations in both parks. Extensive brush lands, consisting predominately of shrubs such as chamise, manzanita, mountain mahogany, and various species of ceanothus, characterize the chaparral ecosystem.

Gayton (1948) notes that manzanita berries were gathered and processed into a drink by the Indians, and manzanita was also used to fashion arrow straighteners. Digging sticks were made from mountain mahogany by the Owens Valley Paiute.

Mixed-Conifer. The mixed-conifer ecosystem occurs within the 4,000 ft. to 6,000 ft. elevation of the parks and is characterized by intermingled stands of pine (Jeffrey, sugar, and ponderosa), white fir, and incense cedar. The ground cover and understory shrubs are extremely variable. Mountain and Sierra gooseberry are prevalent along stream channels and edges of meadows. The seeds of the sugar and Jeffrey pines were eaten by all the ethnographic inhabitants of the region as were the mountain and Sierra gooseberries. The Foothill Yokuts and Sierra Miwok carved their bows from incense cedar.

Giant Sequoia. Over 14,500 acres of Giant Sequoia occur between an elevation range of 3,000 ft. to 8,000 ft. They overtop the canopy of associated mixed-conifer species and shadow the forest floor to the extent that only shade-tolerant ground cover species such as trail plant, sweet cicely, and seedling white fir can grow.

Lodgepole-Subalpine. The lodgepole-subalpine ecosystem lies between 8,000 ft. elevation and timberline. A lodgepole pine community is usually restricted to canyon bottoms, valleys, lake basins, and north slopes where soil moisture is relatively high. Lodgepole pine is the most numerous tree species of this community though mountain hemlock sometimes occurs in light density as well as occasional red fir and sugar, Jeffrey, and ponderosa pine. Usual associates include manzanita, larkspur, wood betony, bitter cherry, and pennyroyal.

The utility of sugar and Jeffrey pines and manzanita as a food source has already been noted. Sierra juniper, also present in this community, was utilized as a food source (berries), as well as a raw material for the manufacture of bows by the Monache.

Meadows

Meadows can be found scattered throughout this portion of the Sierra, from the mixed-conifer to the lodgepole-subalpine ecosystems. Some are the result of the filling in of glacial lakes, others have developed along moist stream deposits, or have occurred due to impeded drainage.

Meadows have been important as a feeding place for many animals and thus offer themselves as easy prey for the hunter. Much of the raw material for basketmaking, i.e. willow and grasses, was obtained from this zone.

Wildlife

A rich diversity of wildlife species are hosted by the great variety of ecosystems in the parks. Ranging between several of the habitats described are 73 species of mammals, 194 species of birds, 22 species of reptiles, and 10 species of amphibians. Sequoia-Kings Canyon National Parks contain the extensive and varied habitats required by far-ranging ungulates and predators such as the mule deer, black bear, mountain lion, red-tailed hawk, golden eagle, and coyote--entirely within their boundaries. Although the grizzly bear and gray wolf once frequented these areas, they have since been exterminated. Native fish of the region include rainbow and golden trout and the Sacramento squawfish.

In addition to the fauna already metioned, antelope, mountain sheep, rabbits, raccoon, woodrats, ground squirrels, mountain quail, ducks, doves, pigeons, suckerfish, and catfish were extensively exploited as a food source and for other economic uses (i.e. clothing) by the Indians of the area.

Paleoclimatic Reconstruction of the Region

According to Moratto, King, and Woolfenden (1978), during the Holocene epoch (10,000 years B.P. to present) there were approximately six cool/moist periods of 400-1500 years duration separated by five warm/

dry intervals. The Altithermal was an exceedingly warm/dry episode ending ca 2900 B.P. A cool/moist period prevailed between 2900 and 1500 B.P., which was followed by warm/dry conditions until 600 B.P. Subsequently, until ca 100 B.P., California's climates were similar to those of the early historic period.

Environmental change can have impacts on human settlement patterns, but the precise direction of the impacts may be difficult to determine. Moratto et al. (1978: 151) state that with an increasing warmth and drying of the environment, there will be a reduction of the water supplies, loss of flora and fauna due to the reduced water supplies, and a lengthening of the growing season in higher elevations. The overall effect was a reduction in the carrying capacity of the land, thus creating stress on prehistoric human populations. Conversely, increasing coolness and moisture would exhibit opposite trends.

Moratto et al. (1978: 155-57) observed a congruence between cultural changes in the Buchanan Reservoir region with environmental fluctuations which deserves summation here. Settlement in the Buchanan area did not commence until after very warm/dry conditions began to improve around 900 B.C. Settlement was scarce until about A.D. 250 when very cool/moist climatic conditions were established. After A.D. 250, during this cool/wet period, populations became sedentary and organized. Settlements grew and trade increased between both the coast and the eastern Sierra Nevada.

A sudden warming and drying trend set in around A.D. 550, coinciding with an apparent period of marked social disorganization. During this period of relative desiccation, which lasted until A.D. 1350, political organization waned, violence increased, populations diffused, and nucleated settlements dispersed. Smaller groups with little political organization or status differentiation occupied the southern Sierra foothills. Nucleated villages may have moved to higher altitudes with the vertical shifting of the life zones, as the discovery of a Raymond Phase village in the Upper Sonoran Zone may indicate. Trade to the coast ceased.

Population suddenly increased around A.D. 1350 with the restoration of a cool/moist climate, while social organization grew in complexity and settlements multiplied. Also, trade to the coast resumed, and status differentiation was conspicuous.

The authors note that the cultural sequences defined at Hidden Reservoir and Yosemite also coincide with this pattern of environmental change.

Summary

This brief account of the environment of Sequoia and Kings Canyon National Parks has illustrated the large diversity of microenvironments and great variety of exploitable resources the parks have to offer. Much of the area obviously is too high to permit perennial habitation, but it is these higher, cooler areas that have furnished man, from prehistoric times to present, with an escape from the summer's oppressive heat of the great central valley. As we shall see in chapter 5, evidence has been uncovered of archeological sites existing in the High Sierra. These sites may have been seasonally inhabited, using certain resources available only during the summer months. The lodgepole-subalpine ecosystem (above 8,000 ft.) contains sugar and Jeffrey pines, which produce edible seeds, and manzanita, which has edible berries and was used for the manufacture of arrow straighteners. The Sierra Juniper is also present here and was exploited as both a food source and for the manufacture of bows. As summer progressed, game animals retreated to the higher elevations in search of food and water. The prehistoric inhabitants were surely cognizant of the seasonal movements of game animals and took full advantage of it. Lastly, trade expeditions important to all the ethnographic inhabitants of the region were launched in the summer and traversed the higher areas of the Sierra.

Additionally, the parks contain areas with year-round mild climate, due to lower elevation or other microenvironmental conditions, which could permit perennial habitation. It has not yet been firmly established whether or not the large sites located at Hospital Rock and Potwisha Camp are representative of such habitation. The oak-woodland ecosystem occurs on the lower slopes of the Sierra along the western boundary of Sequoia and Kings Canyon National Parks. These areas do not suffer from extreme hot or cold temperatures, and they have the most abundant food resources of any of the ecosystems in the parks. However, these ecosystems were subject to the fluctuations of the climate and may have shifted vertically during prehistoric times.

Some localities in the parks are situated in proximity to a number of microenvironments and offer man a large assortment of exploitable resources. These "ecotones" have characteristically been very desirable locations for population aggregates. Sequoia and Kings Canyon National Parks offer a wide range of exploitable resources for man, and the parks are as attractive to man today as they were in the past.

Chapter 3

HISTORY OF EUROPEAN-AMERICAN SETTLERS IN THE REGION

This section contains a brief account of the history of white settlers in the parks' region, summarized from Strong (1964). All data in this section can be regarded as taken from that source unless otherwise specified.

For many years, Spanish explorers were the only white men to see the San Joaquin Valley and the mountains surrounding it. Captain Pedro Fages began these explorations in 1772 with his travels through the southern portion of the valley. Father Francisco Garces, a Franciscan missionary, crossed the Kern River in 1776 and investigated the Tule lands and Indian villages of the Tulare Valley. In 1804 Padre Juan Martin visited the Tulare region and was followed two years later by the Morago expedition which camped for several days on the Kaweah River and named the Kings River. Within the next two decades, several attempts to locate a suitable mission site were made but with no success.

The first crossing of the Sierra Nevada by a white man was made in 1827 by Jedediah Smith, a fur trapper, who crossed from west to east.

In 1850 the first attempt at permanent settlement was made by a party led by John Wood, whose members built a cabin on the south bank of the Kaweah River east of the present town of Visalia, only to be killed in early 1851 in an Indian raid. A successful attempt at settlement was made by two sets of twin brothers, and, a few months later, the county of Tulare was organized which, in 1852, had a population of 65.

A company of troops of the Mariposa Battalion, led by Captain John Kuykendall, was the first party to travel in the vicinity of the Big Trees of the Kings-Kaweah Divide. Discovering Yosemite Valley in March of 1851, Kuykendall also led his troops in an exploration of the valleys, foothills, and mountains of the Kings-Kaweah region.

Hale Tharp, in 1856, followed the Kaweah River up from the San Joaquin Valley into the Three Rivers District at Horse Creek--the first white man ever to see the area (Tobin 1941). About 2,000 Indians (the Potwisha tribe of the Western Mono) were living along the Kaweah River above the present town of Lemon Cove when Tharp entered the area. Tharp accepted an invitation by the chief of the Potwisha tribe to travel back into the mountains. Thus, in 1858, Tharp became the first white man to see the Giant Forest. The return trip led Tharp past Hospital Rock where he found an encampment of 500 Indians.

It was not long before other white men entered the Three Rivers District. In 1859, Hopkins Work staked a claim near the junction of the three branches of the Kaweah River. After the discovery of gold on the Kern River in 1854, the population of Tulare County rose to over 4,000 by 1860. Smallpox, scarlet fever, and measles broke out in the white population in 1862, spread to the Indians, and decimated much of their population.

Although the foothills of the Sierra Nevada were receiving attention by white settlers, not many had ventured into the higher elevations of the mountains. J. H. Johnson, five companions, and an Indian guide crossed Kersage Pass in the present Kings Canyon National Park in the summer of 1858. Not long after, an onrush of gold seekers crossed the Sierra into present Inyo County along a route just south of the present-day Sequoia National Park.

The first extensive exploration of the High Sierra was the Whitney survey of 1864. Inspired by Clarence King's glimpse of the high peaks of the Sierra from Mt. Bullion in the Mariposa area, the expedition, consisting of Professor J. D. Whitney, William Brewer, Charles Hoffman, Clarence King, and James Gardner, conducted a reconnaissance survey of the southern High Sierra. Mt. Brewer and Mt. Whitney were discovered during this survey, and the true topography of the Kings-Kern-Kaweah watersheds was observed and could be understood for the first time. John Muir spent some time in 1873 exploring the area at the head of the Kings and Kern Rivers, but nothing was published of his trip. Two years later, Muir trailed the belt of giant sequoias south from Mariposa Grove in Yosemite. Traveling through the North and Marble Forks of the Kaweah River, Muir met a man on horseback, Hale Tharp, in a place Muir named the Giant Forest.

Most of the men who followed Tharp were not scientists, like Muir, but rather they were prospectors, hunters, and sheepherders.

The sheepherders were most likely the first and most important group to enter the mountains and utilize their resources. Impetus for this influx came from the great flood and drought of 1862-64 when the search for grazing land directed attention to land in the upper Sierra Nevada.

Normal procedure for the southern San Joaquin sheepherders was to drive the sheep on a yearly round, taking them as far north as the Upper Kings and Kern rivers, then back to home base before winter. Unfortunately, widespread destruction of the mountain watersheds resulted from the sheepherding practice of the time, coupled with a total lack of control over the use of the land.

Prospectors, as well as sheepherders, were among the early explorers of the Kaweah and Kern watersheds. Even Hale Tharp prospected for minerals during his early trips. Most of the prospecting came to little except for a strike at Mineral King. The discovery claim was made by James Crabtree and S. Bolden on July 24, 1873, and a rush to Mineral King followed immediately.

The lumbermen also played an important role in the settling of the region. Logging began almost as soon as the first white settlers arrived in Tulare County, and, by 1856, a mill had been established in the foothills. The Visalia Delta in 1860 reported that new mills were being located along the Kaweah and Tule rivers.

Logging increased quickly in those areas accessible by road, and, by the time Muir visited the sequoia belt in 1875, the Hyde Mill on the North Fork of the Kaweah River had cut more than 2,000,000 ft. the previous season.

One interesting venture began in 1882 with the founding of the Kaweah Cooperative Commonwealth Colony. The colony was founded by a group of men inspired with theories of Socialism and the teachings of Karl Marx. Fifty-seven members of the colony filed as individuals on adjoining tracts of land in the Giant Forest and adjacent area. This action aroused the suspicion of some Visalia citizens concerned with preserving the big trees, and under the leadership of Colonel George W. Stewart, a Visalia newspaper publisher, they sought to have the filings suspended. Meanwhile, the construction of a road from Kaweah up to the North Fork Canyon to the filings of the colonists began in 1886. By now, the colony totaled several hundred persons, and a school was established. Eventually federal agents made investigations into the actions of the colony, some reporting favorably and others not. The road construction continued, and a mill was established to get the timber on the market. The destiny of the colony was decided on September 25, 1890, when the Congress of the United States set aside the disputed lands as a national park, and nullified the claims of the colonists. Thus the nation's second national park, Sequoia National Park, was established on September 25, 1890.

Many remnants of these past activities still exist in Sequoia and Kings Canyon National Parks. Logging activities left traces of old mills, logging flumes, old roads, and other remains. Nowhere in the parks is the historic mining era better represented than in the Mineral King District, as the recent archeological survey by Kamp and Whittaker (1979) verifies. Sheepherding practices, in some cases, have left their mark by dramatically changing vegetational patterns. In the remote backcountry of Kings Canyon National Park are the small line of cabins of fur trapper Shorty Lovelace, an early twentieth century mountaineer seeking refuge from the temptations of civilization (Tweed 1976).

The historic cultural resources in Sequoia and Kings Canyon National Park represent times and circumstances that will never again be repeated. As such, they are an invaluable resource that must be preserved for the benefit of future generations.

Chapter 4

ETHNOGRAPHY OF THE REGION

The ethnographic inhabitants of Sequoia-Kings Canyon National Parks and adjacent areas include the Sierra Miwok, the Yokuts, the Monache (Wobonuch, Waksochi, and Potwisha), the Owens Valley Paiute, and the Tubatulabal (see map 2). These groups will be discussed individually beginning with the Sierra Miwok and ending with the three subgroups of the Monache whom Elsasser (1962) considers to be the historic inhabitants of the region now occupied by the parks.

Most of the ethnographic data was obtained from between 1907-34 when there was a push by California anthropologists to record the lifeways of rapidly vanishing peoples.

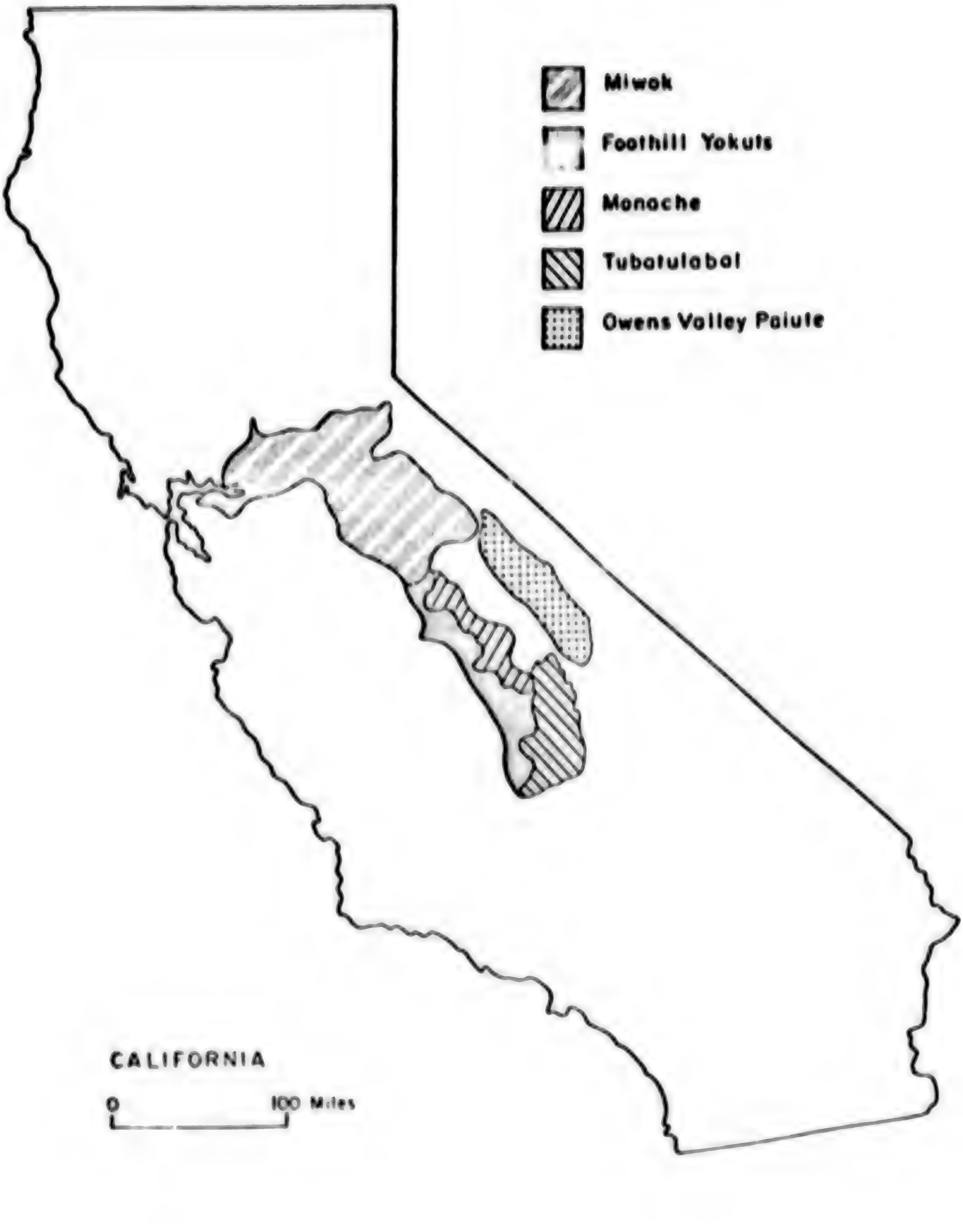
Southern Sierra Miwok

The following account on the Southern Sierra Miwok was taken from Richard Levy (1978), and unless otherwise noted, all data can be considered from that source.

The area occupied by the Southern Sierra Miwok comprised the upper drainages of the Merced and Chowchilla rivers. The Southern Sierra Miwok are a division of the Eastern Miwok, who are one of the two major divisions of the Miwokan subgroup of the Utian language family. A division has been made to separate the Southern Sierra Miwok into two dialect areas, one focusing upon Mariposa Creek and the Chowchilla and Fresno rivers and the other on the Merced River.

The tribelet was the principal political unit of the Miwok, which maintained autonomy and contained a defined territory over which complete control of the natural resources was exercised. Each tribelet included several more or less permanently inhabited settlements and even more seasonally occupied campsites used during the annual hunting, fishing, and gathering activities.

Lineages were the only other meaningful political unit for the Miwok. They were localized and named for a specific locality and, in most cases, the lineage localities were the semipermanent inhabited settlements of the tribelet. The population of these settlements has been estimated to be about 25 persons on the average. Some ethnographers of



Map 2. Location of the Tribal Territories. (Adapted from Handbook of North American Indians, Vol. 8, 1978.)

the early twentieth century (Gifford 1917, Kroeber 1925, Merriam 1907) have determined the location of lineage settlements for the Sierra Miwok.

Apparently the Miwok occupation of the Sierra Nevada occurred after the beginning of the Late Horizon. After the arrival of Europeans and Americans to California in the 1840s and the introduction of new diseases to the aboriginal population, relations between the Sierra Miwok and the foreign settlers soon became hostile. Reservations or rancherias never became successfully established in Southern Sierra Miwok territory; however, many persons of Miwok descent still lived on the shore lines of the Sierra Nevada foothills as of the early 1970s.

Aboriginal population estimates for the Sierra Miwok were made by Cook (1955), based on village lists compiled by Kroeber (1925), Gifford (1917), and Merriam (1907). However, Baumhoff (1963) reanalyzed Cook's data and arrived at a population estimate of 2,700 for the aboriginal population of the Sierra Miwok.

Subsistence. The Sierra Miwok practiced a seasonal round of hunting and gathering, exploiting foodstuffs not found in the immediate vicinity of their permanent settlements as they became available.

Plant Foods. Several varieties of acorns were considered the most highly prized plant foods by the Sierra Miwok. The most important sources of acorns were the interior live oak (*Q. wislizenii*), the blue oak (*Q. douglasii*) in the foothills, and the black oak (*Q. Kelloggii*) in the higher mountains.

Many varieties of nuts were exploited, including buckeye (*Aesculus Californica*), laurel (*Umbellularia californica*), hazelnut (*Corylus cornuta var californica*), digger pine (*Pinus sabiniana*), and sugar pine (*Pinus lambertiana*). The most important were pine nuts and buckeyes.

Other plant foods of importance to the Sierra Miwok were various kinds of seeds and roots, and certain secies of plants were used as greens.

Animal Foods. The mule deer (*Odocoileus hemionus*) was the largest source of animal protein in the foothills and mountains; however, the black bear (*Ursus americanus*) and grizzly bear (*Ursus horribilis*) were also hunted as food by the Sierra Miwok.

The most important game birds for the Sierra Miwok diet were the valley quail (*Lophartyx californicus*) and the mountain quail (*Oreortyx pictus*).

Trout was the most common food fish.

Hunting Implements and Weapons. The Sierra Miwok made their bows from the wood of the incense cedar, and arrowheads were made with a concave base, sometimes with side notches. There were two types of arrow straighteners: one type consisting of a single piece of steatite with a transverse groove; and a perforated type made of stone, manzanita, or maple.

Basketry. Both twined and coiled basketry were manufactured. The basketry of the Southern Sierra Miwok were stylistically similar to that of the Yokuts and Numic peoples. Willow was the primary material used in the foundation of coiled baskets and the warp and weft of twined baskets, while red bud bark served as the warping element in coiled baskets.

Seed beaters and burden baskets employed in gathering seeds, triangular winnowing baskets, open work sifters of several different shapes, globose storage baskets, basketry cradles, and rackets used in a ball game were all fashioned by twining. Baskets manufactured by the coil technique include plate-form winnowing trays, parching baskets, and truncated conical baskets of several varieties, which were used to cook and serve acorn mush. The Sierra Miwok also made cordage from milkweed and Indian hemp.

Trade. The Southern Sierra Miwok acted as middlemen in the trade of salt and obsidian from the Great Basin to the Plains Miwok in the central valley. Also, according to Davis (1961), the Southern Sierra Miwok supplied clam disc beads (originating in Costanoan territory) to the Owens Valley Paiute and received rabbit-skin blankets and basketry material from them.

Summary. Although the Southern Sierra Miwoks occupied a territory to the north and west of the present Sequoia and Kings Canyon National Parks, there can be little doubt that they interacted with the aboriginal inhabitants of the parks. The Southern Sierra Miwok were an important link to central valley populations, and most likely borrowed some elements of culture from their closely affiliated Plain Miwok kin, which, in turn, they passed on to their Sierra neighbors. Of course, the influence would have worked the other way around also. Notice has been made to the stylistic similarities in basketry shared with the Yokuts, and trade relations maintained with the Owens Valley Paiute.

Foothill Yokuts

Data concerning the Foothill Yokuts has been abridged from R.F.G. Spier (1978). Other sources will be noted when applicable.

The Foothill Yokuts are a group of approximately 15 Yokut tribes, who inhabited the western slopes of the Sierra Nevada from the Kern River northward to the Fresno River. The tribes that were located nearest to the present area of Sequoia-Kings Canyon National Parks were the Chukchansi, Dumna, Gashowu, Choynimni, Chukaymina, Gawia, Wikchamni, Yokod, and Yawdanchi.

The most obvious difference between the tribes were linguistic and territorial. The people of one tribe spoke a discrete dialect of the Yokuts and Penutian language and were the residents of a certain locale.

Each tribe inhabited one or more village, and the areas around these villages were considered to be home and to be exploited solely by their residents.

The northernmost of the Foothill Yokuts, the Chukchansis, had close alliances with the Southern Sierra Miwok to the point that confusion exists among some of the border villages as to tribal affiliation. During the later half of the nineteenth century, the central Foothill Yokuts came into increasingly close contact with the Monache.

Subsistence. Foothill Yokuts relied on hunting, gathering, and fishing as their subsistence economy. Beyond the mainstays of their diet--mule deer, quail, and acorns--many other sources of food were used: raccoon, ground squirrels, woodrat, duck, doves, pigeons, trout, suckers, catfish, wasp grubs, manzanita berries, Mariposa lily bulbs, arrowhead root, soap plant bulbs, and various seeds.

Technology. The Foothill Yokuts used obsidian (partly from the eastern slopes of the Sierra Nevada), granite and quartz (available locally), and soapstone (from sources in the foothills), for both their chipped and ground stone tools. They made both plain and sinew-backed bows, often from mountain cedar, and strung with sinew.

A utilitarian type of pottery was made by the Central Foothill Yokuts. Gayton (1929) suggests that the craft reached the Yokuts by way of the Monache from the Owens Valley Paiute. Vessels were usually formed by the coil method, largely undecorated, and sand-tempered. Most bowls with flat bottoms, flaring straight sides, and slightly incurved rims were made in this manner. Smaller bowls and tubular tobacco pipes were hand-molded.

All Foothill Yokuts manufactured basketry of good quality. Coiled and twined baskets were made, with the latter technique used for openwork products, such as, sieves, winnowers, and cages. Baskets were made from willow, black sword fern roots, red bud bark, and a variety of grasses. Cordage was also manufactured from milkweed, Indian hemp, and the inner bark of willow.

Structures. The Foothill Yokuts made a variety of structures which included two forms of a conical dwelling, a ramada, a sweathouse, and a hemispherical shade (grinding booth).

The conical houses were 12 to 15 ft. in diameter, and the floors were excavated about 2 ft. deep. The framing consisted of 2-in. poles set into the ground and brought together at the top and strengthened by three circumferential hoops tied on the inside. The exterior of the house was covered with a thatch of local materials or with slabs of pine or cedar bark.

The ramada usually had five posts, one at each corner and one in the center, set into the ground with their tops connected by sticks to form a base for piled brush. The ground beneath was not excavated but became hardened with use.

The sweathouses were built similar to the conical houses but were larger, and the floors were excavated several feet below the surface. The northern Foothill Yokuts used a frame of heavy oak timbers.

Trade. According to Davis (1961), the Foothill Yokuts engaged in extensive trade networks. The Northern Foothill Yokuts supplied acorns, willow? bark baskets, and shell beads to the Monache and received from them rabbit-skin blankets, moccasins, rock salt, red and blue paint, and pinyon nuts.

The Central Valley Yokuts traded clay, black paint, and black sword fern roots and redbud bark for basketry to the Southern Foothill Yokuts, and, in turn, received *clodium* roots, bunch grass, soaproot brushes, salt from salt grasses, baskets, and various roots and herbs. They also received sinew-backed bows from the Monache and red paint from the Owens Valley Paiute.

The Southern Valley Yokuts traded, to the Owens Valley Paiute, deer, antelope and elk skins, steatite, salt from salt grasses, baskets, and shell beads and received from them sinew-backed bows, jerked deer meat, rock salt, obsidian, hot rock lifters of wood, pinyon nuts, and moccasins.

Summary. The Foothill Yokuts occupied the territory just to the west of the Monache. Salvage excavations conducted at Terminus Reservoir has revealed a continuous occupation of Yokuts people from before A.D. 1300 (Elsasser 1966). Mention has already been made of the increase in interaction between the Foothill Yokuts and their eastern neighbor, the Monache, during the later half of the nineteenth century. In fact, von Werlhof (1960) speculates that when Hale Tharp visited the Indian village at Hospital Rock, it was a refugee village composed of Yokuts and Monache peoples. It's not certain how far back the strong interaction between the two groups goes, but it is quite possible that the Foothill Yokuts ventured into the Sequoia-Kings Canyon National Parks area for subsistence and trade purposes. The Foothill Yokuts shared many characteristics with the Monache but differed in language.

Owens Valley Paiute

Julian Steward's work on the Owens Valley Paiute (1933) has been the major source of data for this section, and any other source will be noted.

The Owens Valley Paiute are the southernmost extension of the Shoshonean group, the Northern Paiute, who occupied most of northern Nevada. They inhabited districts of the Owens Valley and adjacent valleys, each with communal hunting and seed rights, political unity, and several villages.

Habitat. Owens Valley lies within the Great Basin geographical region, receiving scant rainfall, with streams terminating in brackish lakes. Summers are hot, while moderately cold winters are the rule. Vegetation is limited by aridity to hardy, drought-resistant plants.

Subsistence. The Owens Valley Paiute practiced a seasonal round for optimal exploitation of their environment. During the summer months, people remained mostly in the valley fishing and gathering seeds. After seeds were gathered in the fall, groups would assemble for celebration and communal rabbit drives. Winter was the season for small groups to spend time in the mountains collecting pine nuts. These groups would return to their valley villages in the spring, bringing their surplus pine nuts. Seasonal movements were usually within 15-20 mi. of the valley village, the territory used being owned by the district.

Seed gathering was done by women working in groups. Seeds were beaten with seed beaters into conical carrying baskets. Some plants, such as sunflowers, were picked, threshed, and winnowed at home. Digging sticks of mountain mohagany were used to obtain tubers and roots. Both seeds and roots were stored in the ground in grass-lined pits covered with grass and earth.

Pine nuts were the most important Paiute plant food. Pine nuts occurred chiefly in the Inyo and White mountains between 6,000 ft. and 9,000 ft. Good crops were irregular, coming every few years. However, abundant crops lasted through the winter and into the summer.

Pine nut territories were owned by the district, and property rights were strictly enforced. Trespass was resented, causing the most trouble between otherwise peaceful Paiute districts.

Large plots were irrigated with the use of dams and ditches to increase the natural yield of several wild seed plants. Irrigation was a communal affair with the men constructing the dams and the women conducting the harvest.

Districts also owned fishing rights to certain streams, rivers, and sloughs. Both individual and communal fishing efforts were made, with the latter being directed by the district headman and the catch being equally divided.

Hunting was also on an individual or communal basis. Communal hunting groups were required to stay within their districts, but individuals might hunt anywhere. Animals hunted included deer, mountain sheep, antelope, rabbits, wildcats, and a variety of waterfowl.

Domesticated Animals. Dogs were domesticated by the Owens Valley Paiute and were kept mainly as pets, being eaten only during times of famine. Horses were never of great importance to the Owens Valley Paiute and were eaten prior to 1860. Eagles and hawks were captured when young and raised in small wickiups for their feathers.

Technology. Ninety-five percent of projectile points made by the Owens Valley Paiute were of black obsidian, mostly from Glass Mountain. A poisonous obsidian was said to occur at the Bertrand Ranch, 60 mi. northwest of Benton.

Pottery was manufactured by the coil technique. Pipes were made by molding clay around a stick, drying, then firing it, thus burning out the stick. Steward (1933, p. 268) notes that the small flat-bottom vessels made by Owens Valley Paiute informants closely resembles those made by Yokuts and Monache informants.

Rabbitskin blankets were woven by the men.

> The fur of 50 to 75 jackrabbits, killed in the fall, was slit inside the hind legs, peeled off inside out, and cut into a single strip. Two strips were twisted together into a fur rope by tying their ends to a stick idled on the thigh, then were stretched outdoors to dry, and rolled into a ball. Strips were added end to end by inserting one through a hole in the other and twisting (Steward 1933: 269).

Women wove baskets out of willow that was cut only in the winter. A variety of basket forms were made including: conical carrying bas-

Only the Pahkanapil survived the profuse white settlement of their territory that began in 1850. The Tubatulabal language was of the Uto-Aztecan family, and the three bands spoke mutually intelligible dialects of their language.

The area inhabited by the Tubatulabal is mainly mountainous, with elevations ranging from 2,500 ft. to 14,500 ft. Valleys in this region are characterized by a transition desert grassland and interior chaparral--upper sonoran vegetation pattern (Munz and Keck 1959). Fauna is quite varied and includes rabbits, squirrels, deer, mountain lion, mountain sheep, coyote, skunk, California brown bear, geese, duck, teal, coot, quail, pigeon, trout, whitefish, suckers, catfish, minnows, and fresh water mussels.

Sociopolitical Organization. The band, composed of several nomadic family groups who settled in semipermanent villages near rivers in the winter, was the principal political unit of the Tubatulabal. Each band had its own chief and a high degree of internal unity, but interband political unity was absent.

According to Hoebel (1966) the Tubatulabal observed territorial rights with certain natural geographical boundaries marking off local group territories although members freely searched other band's territories for food.

Technology. Both coiled and twined baskets were made of split willow or tree yucca roots and deer grass as the foundation material. Coiled baskets sometimes bore designs of snakes, human, or geometric figures.

Ceramics made by the coil technique were fired of a red clay available in the South Fork Kern Valley.

Two types of bows were manufactured by the Tubatulabal: a sinew-backed bow and a self-backed bow. Nets, traps, snares, and throwing sticks were also used in hunting. Fishing instruments included nets, bone and wood pronged harpoons, fishhooks, and stone-and wood corrals.

Subsistence. Hunting, fishing, and gathering rounded out the subsistence economy of the Tubatulabal. Two staple crops--acorns and pine nuts--were used, and the difference in maturation cycles of both crops enabled the Tubatulabal to utilize both crops each year. A variety of small seeds (chia, wild oats, Mentzelia) and berries (juniper, manzanita, gooseberries, box thorn berries) were gathered by women using seed beaters and catch baskets. Cattail and tule roots and various bulbs were also obtained by the women through the use of digging sticks.

Fish were second in economic importance to acorns and pine nuts. Communal fishing activities took place in July; otherwise, it was an individual effort.

Deer, bear, mountain lion, mountain sheep, and antelope were hunted with the sinew-backed bow. Each year the Tubatulabal would join in with the Yokuts and Kawaiisu for communal antelope drives in the San Joaquin Valley. Rabbit hunting was also a communal affair.

The Tubatulabal conducted trade with the Owens Valley Paiute to the east and the Foothill Yokuts to the west.

Summary. Most probably the Tubatulabal at times inhabited areas that are now within the southern portion of Sequoia National Park. Linguistically they were related to the Owens Valley Paiute and the Monache. They shared many characteristics with their neighbors to the east and west. Their seasonal rounds of exploitation brought them into contact with all their neighbors. Annual cooperative hunting efforts were conducted with the Foothill Yokuts. The earliest positive date attributed to a Tubatulabal cultural horizon is AD 1450. The encroachment of white civilization on Tubatulabal territory took heavy tolls on their population, and today there is very little left of their culture.

Monache

As previously reported, Elsasser (1962) considers the Potwisha, Waksachi, and Wobonuch tribes of the Monache to have been the ethnographic inhabitants of the Sequoia and Kings Canyon National Parks region. All data in this section was adapted from Robert Spier (1978) unless otherwise cited.

The Monache were comprised of six tribal groups: the Northfork Mono, the Wobonuch, the Entimbich, the Michahay, the Waksachi, and the Potwisha. These independent tribes did not contain any political unity.

Although the Monache shared a distinct language in the western branch of the Numic family with the Owens Valley Paiute, they differed from them in being located west of the Sierra Nevada crest and in acculturation to the Indians of California rather than the Great Basin.

Most of their time was spent in the Transition Life Zone (3,000 ft. to 7,000 ft.), but they crossed the Sierra crest on trading expeditions at elevations between 11,000 ft. and 12,000 ft.

The Wobonuch tribe inhabited the areas along the various forks of the Kings River from the confluence with the North Fork upstream. There were several habitation sites along the North Fork up to the present Black Rock Reservoir, and two villages were known to exist on Mill Flat Creek, which drained Sequoia Lake into the Kings River.

Potwisha territory began in the west on the banks of the Kaweah River close to the present town of Three Rivers and extended eastward up the Middle Fork of the Kaweah to Salt Creek or the East Fork.

Eshom Creek, a minor tributary of the Kaweah River's North Fork, was the center of Waksachi territory. Along Dry Creek and Limekiln Creek from the present town of Badger downstream for approximately 15 mi. comprised the remainder of Waksachi territory.

Settlements. In general, settlements were small and without organization. Among the Waksachi, anyone could build wherever he pleased. The Wobonuch had a more formalized village plan with houses facing in a southerly direction and set in a semicircle, with the chief living in the center house.

The conical house had an excavated floor of 2 ft. or more and a diameter of 6-12 ft. Frame poles were set inside the excavated area and formed a smoke hole at the top. The frame was further reinforced by encircling willow withes. The exterior was covered with a thatch of grass and fine willow twigs. A fire burned in a central depression in the floor.

Oval houses ranged in diameters of 10-15 ft. by 17-20 ft. and had no excavated floor. Forked posts supported a ridgepole, and the exterior was covered with a grass thatch over the withes that held the poles.

The conical bark house was framed by a few large poles leaning against a forked center post and roped in place. Slabs of cedar bark, laid against the poles, were tied in place. The floor was unexcavated. Frequently dirt was banked around the lower wall.

Structures. Monache dwellings were of three types: a conical house, with an excavated floor; an oval house, with a ridgepole; and a bark-covered conical house, with a center post. The last type of dwelling was unique to the Monache as they inhabited regions with enough elevation to contain the needed bark. However, the first two forms were shared with the Foothill Yokuts. Acorn granaries, constructed of sticks and matting on a raised platform, were also built.

Subsistence. Like the other groups discussed, hunting, fishing, and gathering of wild plant foods were the basis of Monache subsistence. They followed a seasonal round to various elevations on the Sierra slopes.

Acorns, available in the lower parts of their range, and pine nuts, obtained from the Owens Valley Paiute, were basic to the Monache diet. Both were stored in elevated granaries and shelled as required. A beverage was concocted from manzanita berries and other ingredients. Yucca and various other roots were dug and roasted. Certain insects, grubs, and seeds were parched in a winnowing basket prior to consumption.

The Wobonuch made use of harpoons and weirs to catch fish during seasonal runs. The Waksachi used neither but did poison small streams with the crushed residue of an unidentified plant.

Many methods were used to hunt deer, a prime staple to the Monache diet, which included trapping with a spring-pole device, tracking until the deer was exhausted, and driving the deer into an ambush. The bow and arrow was used in the final kill. Bear, usually hunted by several members of a hunting party, were rousted from their caves, and their exit was delayed by members holding poles while the bowman shot the animal. Rabbits and ground squirrels were either smoked or pulled out of their holes by twisting a long flexible stick into their fur.

Technology. The principal material for projectile points, knives, and scrapers was obsidian, which was imported, sometimes as tool blanks, from the Owens Valley Paiute and occasionally traded to the Yokuts.

Plain self-bows of California carved wood were most commonly used, while sinew-backed recurved bows of juniper were also made. Other goods manufactured by the Monache included a carrying net with a tumpline, a feather fire fan of vulture or hawk tail feathers, a soaproot brush, a looped stick mush stirrer, pine tongs, and steatite vessels (Gayton 1948).

Monache basketry resembled that of the Foothill Yokuts. Baby cradles, consisting of a flat trapezoidal base of crossing small sticks held by twining and a hoop-like hood with attached sunshade, occurred commonly among the Monache (Gayton 1948). Designs on the cradles reflected the sex of occupants; among the Northfork Mono, a zigzag for girls and a chevron for boys (Gifford 1932). Various other basketry products were made, such as twined burden baskets, seed beaters, sieves, fan-shaped winnowers, winnowing trays, gambling trays, and treasure baskets.

Gayton (1929) supplies an in-depth description of Monache pottery making. Except for the Northfork Mono, all Monache made pottery by a coiling technique. Pottery was always plain; no slip or painted ornamentation was ever applied. After firing the pottery, the color was usually a dull red. Most vessels had flat bottoms with slightly flared sides and verticle or slightly incurved rims.

External Relations. The Monache maintained close relationships with all their neighbors. Besides trade such external contacts included travel, intertribal assemblies for ceremonies, resource exploitation, and marriage.

Trade. Most Monache trade was with the Owens Valley Paiute, with trading expeditions moving in both directions. Acorns moved eastward while pine nuts, obsidian, and rabbitskins went westward. The Monache also acted as middlemen in trade between the Foothill Yokuts and the Owens Valley Paiute. For a detailed list of goods traded to and from the Monache, see Davis (1961: 42-43).

Summary. The Potwisha, Waksachi, and Wobonuch tribes were the ethnographic inhabitants of Sequoia and Kings Canyon National Parks (Elsasser 1962). They practiced a form of hunting and gathering that took them to all elevations of the area during some time of the year. Large occupation sites, such as Hospital Rock and Potwisha Camp, existed in the lower elevations of the western Sierran slopes (Von Werlhof 1960). These were possibly permanent base camps from which the Potwisha tribe conducted their seasonal rounds. The Monache were a cosmopolitan people engaging in external relations with many groups which included marriage and communal hunting ventures. Trading with their eastern relatives, the Owens Valley Paiute, was constant and not limited to luxury goods but also involving subsistence products. It seems certain that their strong trading relationships, seasonal exploitation pattern and other external contacts would indeed have made the Monache familiar with every square mile in the region (Elsasser 1958). Most of the prehistoric remains discovered in Sequoia and Kings Canyon National Parks may be attributed to these people.

Most descendants of the ethnographic inhabitants of the region have been extirpated by disease, partially or wholly assimilated into white American culture, or mixed with other Indian groups. The population of all the Eastern Miwok in 1910 was estimated by Kroeber to be about 700 persons (Levy 1978: 402), and now it is difficult to determine how many people of Miwok descent are living. There were 154 persons of Monache descent living in three communities in 1950 (Spier 1978), although these communities were not named. Smith (1978) notes that in 1972 many Tubatulabal descendents were employed in the Kern Valley area as cowhands, but only 29 were considered full-blooded Tubatulabal. As of 1972, little remained of the aboriginal Tubatulabal culture with only 6 people (all over 50 years old) who still spoke the language. Aboriginal cultural practices were nonexistent. Descendents of the Foothill Yokuts are scattered throughout small villages and isolated dwellings in their traditional territories (Spier 1978). In 1950 there were two Chukchansi communities, Picayune, near Coarse Gold, where the village exists on a site of a precontact settlement, and one near Oakhurst, both having a combined population of 112 people in 1950. The Tule River Indian Reservation, east of Pottersville, California, contains descendants of Yokuts, Monache, and Tubatulabal. All people on the reservation are organized under a tribal council, and both protestant and Catholic churches exist on the reservation.

Most ethnographic data obtained on these peoples were collected by researchers working during the early twentieth century who attempted to reconstruct the native life of precontact time. However, the modern situation is not well known (Spier 1978: 435). There is ample opportunity to study these people using modern ethnographic techniques and approaches. Not only is the Tule River Indian Reservation a good place for this, but so are the communities outside the reservation in which the Monache and Foothill Yokut live.

The use of ethnographic data as an aid in archeological interpretation is a subject that has received much attention (Anderson 1969; Ascher 1962; Binford 1967, 1968; and O'Connell 1974). Gould (1978: 254-55) notes a problem inherent in the use of ethnographic analogy in archeological interpretation in that ethnographic analogies cannot inform us about prehistoric behaviors that have no modern ethnographic counterpart. However, these analogies are useful for enlightening the archeologist to alternative behavioral modes that otherwise might not have been considered. Also, ethnographic models are useful in providing hypotheses for testing that are less encumbered with ethnocentric bias. Gould (1978) distinguishes between continuous and discontinuous models. In the use of ethnographic analogy, a discontinuous model is one that is "applied in areas where the ethnographic or historic people no longer lead traditional lives and where the ethnographic literature is incomplete," whereas a continuous model "depends upon situations in which the living, ethnographic society upon which the model is based can be demonstrated to be historically continuous with the prehistoric culture being excavated in the same region" (Gould 1978: 255). A continuous model is inherently stronger and, as we shall see in chapter 5, there is reason to believe that continuous models could be applied to the southern Sierra.

Chapter 5

PREHISTORY OF THE SOUTHERN SIERRA NEVADA

In this chapter an attempt will be made to briefly synthesize our current knowledge concerning the prehistory of the southern Sierra Nevada. A general view of the prehistory of the entire area will be given, followed by a region-by-region summary (see map 3).

Throughout the discussion concerning the prehistory of numerous localities in the southern Sierra Nevada, many similarities have been noted among the contemporaneous cultural periods. Of the nine studies summarized in this section, four of them proposed sequential cultural periods. Taking gross liberties with these separately defined cultural sequences, a rough composite cultural sequence may be outlined for the southern Sierra Nevada as characterized by the following traits:

Period I: (500-300 B.C. - A.D. 300-500)

1. Large projectile points.
2. Inferred use of atlatl.
3. Preferred use of obsidian.
4. Manos and metates.
5. Choppers and scrapers.
6. Probable absence of bedrock mortars.

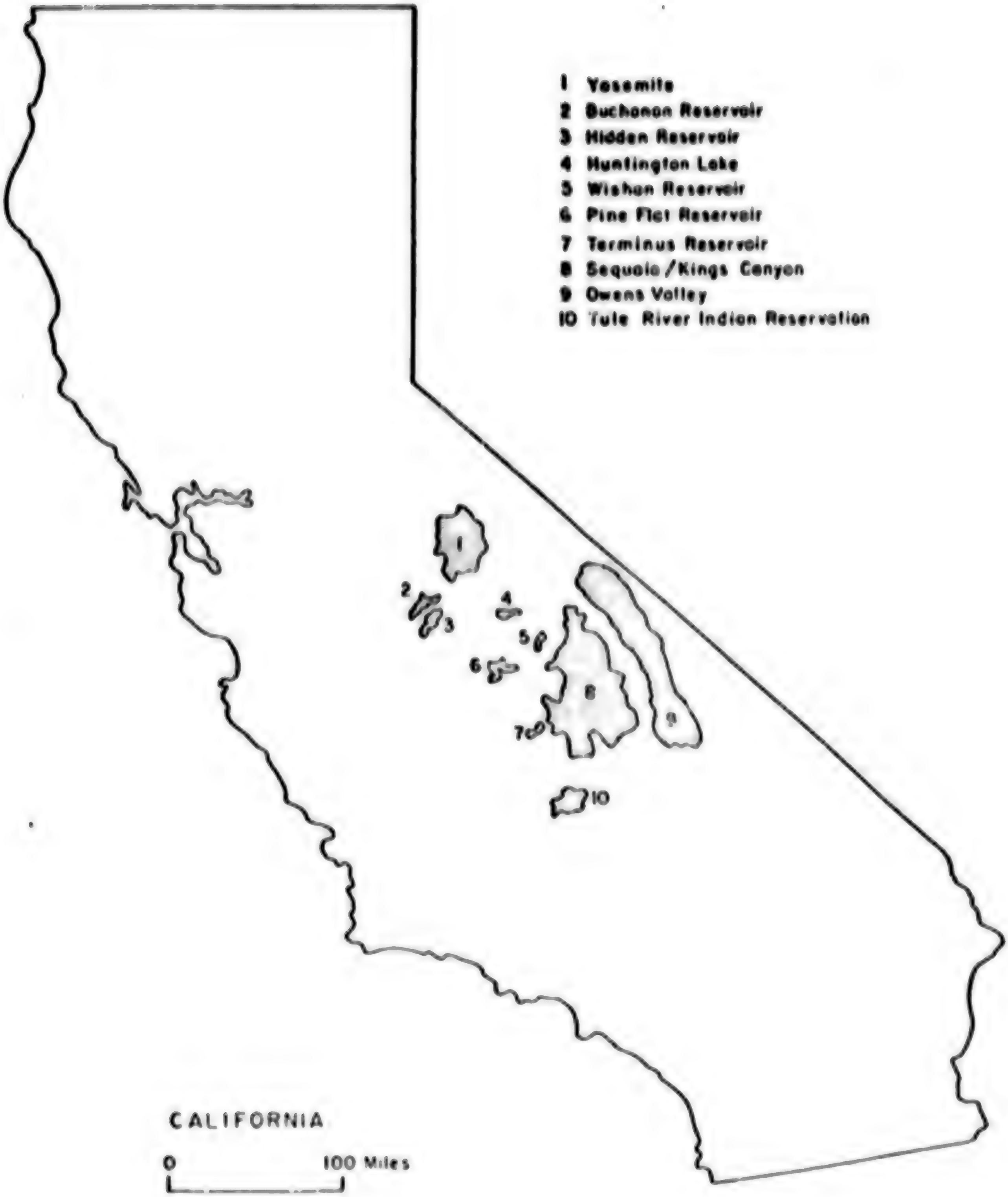
Period II: (A.D. 300-500 - A.D. 1200-1500)

1. Medium projectile points.
2. Presumed use of bow and arrow.
3. Increase use of obsidian.
4. Bedrock mortars.
5. Flake knives and scrapers.

Period III: (A.D. 1200-1500 - A.D. 1850)

1. Small projectile points.
2. Inferred use of bow and arrow.
3. Almost exclusive use of obsidian for projectile points.
4. Bedrock mortars.
5. Flake tools.
6. Steatite artifacts.
7. Shell beads.
8. Pictographs (Yosemite, Wishon, Huntington Lake).
9. Owens Valley Brown Ware (Buchanan, Huntington Lake).

The appearance of obsidian for tool manufacture in the earliest period in an area with no local source shows the early importance of trade relationships. Close relationships between various groups is further



Map 3. Location of Pertinent Archeological Areas.

inferred by the homogenous cultural development of these groups. Also presumed from the evidence presented is cultural continuity from the earliest period on. Referring to the cultural sequence at Buchanan Reservoir, Moratto states (1972: 168) "it should be cautioned that there is no evidence that social replacement occurred at any time during the sequence of earlier culture change, and, indeed, the osteological data indicate populational continuity from Chowchilla Phase times until the historic period."

An expected characteristic of Sierran settlement is that all large village settlements occur below 6,000 ft. in the southern Sierra. Several prominent aspects of the Buchanan settlement pattern are noted by Moratto (1972: 168-70) and are worth repeating as an example for settlement pattern in the southern Sierra Foothills.

Moratto defines five categories of sites based on bedrock mortar counts, housepits, and "ceremonial house" depressions. These are isolated mortar rocks, campsites, small villages, large villages, and village community center.

All village community centers are located along the Chowchilla River. Large villages are evenly distributed along the river and tributary streams. Smaller villages and camps are located mainly along the lesser creeks. Also, the larger villages are located near ecotones, while the smaller sites are most likely to be found within single microenvironments. Finally, the largest sites are also the oldest sites. Because initial settlements occurred along the intermittent Chowchilla River and away from perennial water sources, Moratto (1971, p. 169) proposes that the pattern of traveling to the high country in the summer had been established before or during the earliest occupation with the Buchanan area.

Riverine site locations remained favored through the Chowchilla and Raymond Phases (300 B.C. - A.D. 1500) but with the initiation of the Madera Phase (A.D. 1500 - A.D. 1850), the settlement pattern changed suddenly, and new camps and villages appeared rapidly along small streams throughout the Chowchilla Basin.

A recent survey conducted on the Tule River Indian Reservation (Gehr 1979) revealed two distinct types of sites: one type occurs at low elevations (950 m - 1460 m) and is located on valley floor benches adjacent to perennial streams; the other type exists at high elevations (1660 m - 2230 m), is located on ridge features and possesses circular granite basins constructed in boulders, granite metates, and hand-held millingstones. Both site types are near oak groves and contain mortars and pestles, but the high elevation sites are exclusively within the very desirable Black Oak belt. Gehr (1979) goes on to speculate that the lower elevation sites are probably part of a continuous river bank site which were used at various times of the year, and the Indians worked their way upstream as the summer progressed. On the other hand, the higher elevation sites appear to be coherent entities in themselves. The author uses ethnographic data on the Foothill Yokuts to support his hypothesis by discussing their seasonal procurement practices, and how they would exhibit the archeological patterning discovered by this survey. These same site types exist in Sequoia and Kings Canyon and are most probably subject to similar interpretation.

Yosemite Region

Although this region is considered to be within the central Sierra Nevada, a brief summary of the prehistory of this region seems appropriate.

During three summers of reconnaissance survey from 1952-54 and test excavations at four sites, Bennyhoff (1956) has distinguished three cultural complexes for the Yosemite region: Crane Flat, Tamarack, and Mariposa.

Diagnostic traits of the Crane Flat Complex (? - A.D. 500) are perceived by Bennyhoff (1956: 55) as follows:

1. Preferred use of obsidian for chipped stone tools.
2. Projectile points weighing more than 3.5 gm; along with this is the inferred use of the atlatl.
3. Long, concave base points; simple leaf-shaped points; shouldered points with expanding stems; and shouldered, stemmed points with indented bases.
4. Manos and metates.
5. Probable absence of bedrock mortars.
6. Blade, choppers, scrapers, and hammerstones.

Although the Tamarack Complex is not securely defined, Bennyhoff (1956: 55) tentatively dates this complex from A.D. 500 to A.D. 1200 and characterizes it with:

1. Increased useage of obsidian for knapping.
2. Projectile points weighing between 1 and 3.5 gm; presumed use of the bow and arrow.
3. Leaf-shaped points with concave bases; shouldered or tanged points with expanding stems; side-notched points with concave bases; tonged points with straight stems.
4. Flake knives, scrapers, and short triangular drills.
5. Presence of bedrock mortars.

Lastly, the Mariposa Complex is dated from A.D. 1250 to A.D. 1850 and is attributed to the ancestors of the Southern and Central Miwok. Bennyhoff (1956: 53) characterizes this complex with the following traits:

1. Exclusive use of obsidian for projectile points.
2. Projectile points weighing less than 1 gm.
3. Side-notched concave base points; end-notched points; triangular points with concave bases; shouldered and tanged points with expanding stems.
4. Flake scrapers very abundant.
5. Steatite disc beads and cooking vessels.
6. Clam shell disc beads.
7. Cremation of the dead.
8. Bedrock mortars.
9. Pictographs.

Bennyhoff (1956) suggests that these sequential cultural complexes represent changes in subsistence patterns and population. Fitzwater (1962) disputes this and questions the validity of separating the Tamarack Complex from the Mariposa Complex. Based on excavations at two sites in Yosemite, Fitzwater (1964) proposes two cultural phases with Great Basin and Central Valley connections. The Crane Flat Phase begins around A.D. 1 and is replaced by the Mariposa Phase at A.D. 1000 which lasted until A.D. 1850.

Moratto (1972) points out that of the 401 sites located by the Bennyhoff reconnaissance survey, 83 percent of the village-size habitation sites occurred in the Transition Zone below 6,500 ft. A survey conducted by Napton (Napton and Greathouse 1976) during the summers of 1975 and 1976 located 229 additional sites attesting to the intensive prehistoric occupation of this region.

Buchanan Reservoir

The Buchanan Reservoir area is located in the lower foothills of the Sierra Nevada about 23 mi. northeast of Madera.

Based on an analysis of roughly 20,000 artifacts, 140 graves, and 13 radiocarbon dates from 27 sites, Moratto (1972) defines three prehistoric phases for the Buchanan Reservoir area.

The Chowchilla Phase (B.C. 300? - A.D. 300) is defined by the following traits (Moratto 1972: 159-61):

1. Large, heavy projectile points; EE, ECG, TCS, ST, SSN, and LB forms are especially diagnostic of this phase, though ESN, SCB, SCS, and PSS points also occur. Monterey chert used for variants, but obsidian is easily the predominant lithic material.
2. Numerous small obsidian tools (reworked flakes), including graving, scraping, perforating, and cutting implements; these forms are also affiliated with all later phases.
3. All atlatl weights ("boatstones") and atlatl engaging spurs of bone; use of atlatl inferred from these artifacts and associated projectile points.
4. Cobble mortars and cylindrical pestles; possible utilization of bedrock mortars and/or cobble pestles by A.D. 200 or 300.
5. Slab metates with shallow, oval grinding basins and one-hand manos or mullers; manos tend to be well made, bifacial, and square to rectangular, but unifacial cobble manos and oval-shaped manos were also used.
6. Heavy, percussion-flaked core choppers.
7. Bone, fish-spear guides.
8. Antler bone handles (for cutting implements?).
9. Abundant bone awls.
10. Bone spatulates.
11. Small, roughly discoidal, ground-stone beads.
12. Abundant *Olivella* beads of the A1a, B6b, C1b, C7, C8, F2, F3a, G1, G2a, G2b, and G3b types.
13. H3a1, H3a2, H3b, and H4 *Haliotis* beads.
14. A2 *Macoma* beads.
15. Limpet (*Acmaea*) shell ornaments.
16. Rectangular, triangular, circular, and ovoid *Haliotis* ornaments with various patterns of perforation and lateral incising; both *H. rufescens* and *H. fulgens* are represented.
17. Settlements restricted to the banks of the Chowchilla River; no camps or hamlets on tributary streams.
18. Economic emphasis upon hunting; fishing was important; acorns were less important than in later phases.
19. Primary interments were the only type of disposal made; extended and semi-extended (dorsal, ventral, and lateral) positions were normal--at least during most of the phase; flexed burial first appeared around A.D. 200 to become increasingly popular thereafter; graves usually furnished with artifacts; "killing" of grave goods practiced; red ochre common in mortuary contexts.

20. Non-egalitarian, ascribed social differentiation is evidenced in nonrandom distribution of grave goods, including lavish furnishings with child burials.

Moratto (1972: 161-63) characterizes the Raymond Phase (A.D. 300 - A.D. 1500) by:

1. Obsidian projectile points of moderate to light weight (under 5 gm); EE and SCB type point declines; EES, ESS, RSCN, and RSSN points predominate; DSN1 points appear late in this phase.
2. Use of bow and arrow inferred for the period after AD 600 on the basis of small points that came into use at that time; atlatl and bow may have coexisted for several centuries thereafter.
3. The use of small obsidian flake tools continues from the preceding phase.
4. Ground andalusite cylinders, spindles (nose ornaments?), and ear plugs.
5. Bedrock mortars and cobble pestles employed extensively, presumably in the preparation of acorns.
6. Slab metates and one-hand manos remain important; oval and unshaped bifacial manos are the chief forms.
7. Olivella beads are less abundant than earlier; the diagnostic types are B1, B2, B3a, C3, D1, and, especially, M1a.
8. Haliotis beads and ornaments virtually disappear at the inception of this phase, never to recur in the local sequence.
9. Percussion-flaked choppers are retained from the Chowchilla Phase; they are not considered to be temporally significant.
10. No new sites were settled during the Raymond Phase; the previously established hamlets seem to have experienced chronic cycles of occupation and abandonment after A.D. 400 or 500.
11. The economic emphasis had clearly shifted to acorn exploitation; hunting was still important; reliance upon non-acorn vegetable foods is poorly understood.
12. Primary interment in a tight or loose-flexed position was the preferred mortuary practice; some extended burials occurred as late as A.D. 400 or 500, but not thereafter; few graves are equipped with artifacts after A.D. 500 except for the commonplace cairn of metates and/or boulders piled over the deceased.

The Buchanan Reservoir cultural sequence ends with the Madera Phase (A.D. 1500 - A.D. 1850), which Moratto (1972: 163-64) defines as having:

1. Small, lightweight, obsidian projectile points; DSN and CT types predominate, but earlier EES and RSCN points persist with diminished frequency into the Madera Phase.
2. The use of the bow and arrow is inferred from the small points and the presence of arrow shaft straighteners.

3. Small obsidian flake tools are retained from the earlier phases.
4. Small, polished, stone rings.
5. Proliferation of steatite artifacts, notably pendants, "arcs," vessels, shaft straighteners, tobacco pipes, cylinders, spindles, and earplugs.
6. Andalusite cylinders, spindles (nose ornaments?), and earplugs.
7. Bedrock mortars and cobble pestles used extensively.
8. Metates and manos continue unchanged from the Raymond Phase.
9. Steatite disc beads (considered one of the best time markers).
10. B5, E1, E2, and H1 *Olivella* beads are found in small numbers.
11. A1 and A2 *Saxidomus* and *Tivela* disc beads rarely occur.
12. Tubular bird bone beads.
13. Bone awls.
14. Brownware pottery is rare, very late, and apparently imported.
15. Artifacts of Caucasian manufacture (two components only).
16. Village community settlement pattern emerges with socially central villages along the Chowchilla River and smaller, "daughter hamlets" stationed along tributary watercourses.
17. Strong evidence of marked population expansion after A.D. 1500 or A.D. 1600.
18. Large, oval to circular, semisubterranean houses with earthen floors and wattle-and-daub construction; diameters range from 8 to 17 m; presumably, these structures functioned as ceremonial chambers; at least two such houses resemble historic Miwok dance houses in most particulars.
19. Small, circular residential houses, 3 to 5 m across, with slightly excavated floors and central firepits.
20. Primary interment in the flexed position was the preferred mode through most of the Madera Phase; cremations were introduced around A.D. 1600 or A.D. 1700, evidently being reserved for high status individuals.

Moratto (1972: 167-168) states that there is little doubt that the Madera Phase culture and population were ancestral to the lifeways and society of the historic Miwok and goes on to cautiously conclude that the osteological data indicates that there was populational continuity from the Chowchilla Phase until the historic period.

Of the 66 archeological sites discovered during the survey, 4 were isolated mortar rocks, 20 were campsites, 24 were small villages, 15 were large villages, and 3 were village community centers (Moratto 1972).

Comparisons between the Buchanan Reservoir Phases and Yosemite Phases as modified by Fitzwater (1968) were made and Moratto (1972: 199-200) notes the similarities between the Crane Flat Phase at Yosemite with the Chowchilla and Raymond Phases at Buchanan and further states that the Mariposa Phase at Yosemite is virtually indistinguishable from the Madera Phase at Buchanan.

Hidden Reservoir

Slightly to the south of Buchanan Reservoir lies Hidden Reservoir where an archeological survey and subsurface testing was conducted by Wallace (1968, 1970). Eighteen village sites, numerous milling stations, and several campsites were located during the initial survey. The following year, two large midden areas on opposite sides of the Fresno River were tested. Analysis of the data indicated that both sites were late prehistoric to historic period villages. Based on differences in chipped stone point assemblages, plant processing implements, and steatite vessels, Wallace speculated that the Fresno River functioned as a boundary between the southern Sierra Miwok and the Chukchansi Yokuts (Wallace 1970). These sites appeared to contain heaviest occupation during the late prehistoric period, and the artifacts fit well into the Mariposa Complex at Yosemite (Wallace 1970).

Similarities have been noted by Moratto (1972) between the protohistoric components identified by Wallace at Hidden Reservoir and the Madera and Chowchilla Phase at nearby Buchanan.

Huntington Lake Region

Approximately 35 mi. east of Hidden Reservoir, higher in the Sierra, lies the Huntington Lake region where, between 1953 and 1961, an extensive survey was undertaken by M. G. Hindes (1962). All 139 sites located during this survey occurred above 4,500 ft., of which two were probable trading centers, and 36 were habitation sites, based on Bennyhoff's (1956) definition. Hindes (1962: 42-43) compares artifact assemblages gathered by her study with the three complexes defined by Bennyhoff at Yosemite and notes striking similarities. Based on the survey data, analysis from four test excavations, and comparison with the Yosemite complexes, Hindes proposes the following cultural sequence for the Huntington Lake region (1962: 52-53):

Period 1: ? to A.D. 500

1. Occupation--possibly by early Great Basin peoples (Shoshonean?) or possibly ancestors of the Yokuts (Penutians) from the west.
2. Corresponds to Crane Flat Complex of Yosemite.
3. Use of projectile points weighing over 3.5 gm; spear and dart points probably represented.

Period 2: A.D. 500 to A.D. 1350

1. Before Western Mono (Monache) occupation; probably occupied by Shoshoneans or possibly Yokuts then in the foothills west of the Sierra Nevada.
2. Corresponds to early Mariposa Complex and Tamarack Complex of Yosemite.
3. Use of projectile points weighing between 1 and 3.5 gm.
4. Bedrock mortars.

Period 3: A.D. 1350 to A.D. 1850

1. Last 500 years, Western Mono and related Northwestern Mono occupation.
2. Corresponds to late Mariposa Complex, Yosemite.
3. Use of projectile points weight under 1 gm.
4. Glass trade beads after contact with white settlers.
5. Steatite arrow straighteners, steatite beads, and vessels.
6. Bedrock mortars.
7. Owens Valley Brown Ware.

Hindes (1962: 56) concludes that the cultural development in the Huntington Lake region probably stemmed from a spreading of a basically similar culture from the Great Basin and also, possibly, from central California.

Pine Flat Reservoir

In 1947 Franklin Fenenga and several graduate students from the University of California conducted an archeological survey of an area to be flooded by the construction of Pine Flat Dam on the Kings River (Drucker 1948). Twenty-nine archeological sites were encountered, one of them being a historic Yokuts village. Archeological features and artifacts discovered during this survey included abundant flakes of obsidian and chert, leaf-shaped projectile points, choppers, bedrock mortars and pestles, and 12 house pits.

Wishon Reservoir

The Wishon Reservoir is located on the North Fork of the Kings River approximately 70 mi. due east of Fresno. Several archeological surveys were carried out due to the proposed hydroelectric facility at Courtright and Wishon Reservoirs (Riddell, Olsen, and Hastings 1972; L. Payen 1974; D. Wren 1976). Culminating these studies has been the excavation of two High Sierra sites, FRE-534 and FRE-535, by D. Wren of Fresno City College (Wren 1976).

Based on the analysis of projectile points and associated artifacts, Wren (1976: 52) concludes that FRE-534 and FRE-535 are associated with the Great Basin Owens Valley cultural province. These sites were inhabited by groups from the east on a seasonal basis for exploitation of the resources in this region. He further states that the evidence at these two sites do not clearly reflect any major encroachment from western peoples.

A three-phase cultural sequence for the Wishon Reservoir locality is proposed by Wren (1976: 52-53) and may be summarized as follows:

Long Meadow Phase: 500 B.C.(?) - A.D. 500

1. Cultural affinities with the Great Basin province.
2. Humbolt and Pinto series projectile points.
3. Probable use of the dart and spear.
4. Appearance of Wishon Bases.
5. Flake scrapers.
6. Obsidian as the preferred source of material.
7. Manos and portable metates.
8. Probable absence of bedrock mortars.

Deer Creek Phase: A.D. 500 - A.D. 1200

1. Elko Corner-notched and Elko Side-notched projectile points.
2. Obsidian as the preferred material.
3. Flake scrapers.
4. Mano and metate use diminished.
5. Bedrock mortars during the later times of this phase.

Tule Meadow Phase: A.D. 1200 - A.D. 1860

1. Small projectile points.
2. Inferred use of the bow and arrow.
3. Steatite disc beads.
4. Bedrock mortars.
5. Pictographs.
6. A greater uniformity in Sierran seasonal occupation sites.

Similarities between this phase to the Mariposa Complex at Yosemite and to the Owens Valley Paiute site of Iny-2 are recognized by Wren (1976: 53).

Terminus Reservoir

The most extensive archeological investigations conducted immediately adjacent to Sequoia and Kings Canyon National Parks have been carried out at Terminus Reservoir and are well summarized by Berryman and Elsasser (1966).

Terminus Dam is located on the Kaweah River about 2 mi. northeast of the present town of Lemon Cove and ca 16 mi. west of the Sequoia National Park boundary.

Franklin Fenenga conducted the first formal survey of the area, finding it to be unexpectedly rich in archeological remains, indicating a large aboriginal population. Most remains were habitation sites, usually associated with bedrock mortars, and pictographs, one of which covered five separate faces of a sheer rock bluff made in red, white, and gray-violet paints. These pictographs were later reproduced in full size by Sr. Eduardo Contreras, a Mexican archeologist who was then associated with the University of California (Berryman and Elsasser 1966).

Slick Rock Village was excavated by Fenenga in 1950. House form and burial practices led Fenenga to conclude that the site was occupied by the Wukchumni Yokuts. Impressions in clay fragments indicated grass thatch was used in house construction, and the 13 house pits discovered indicated Wukchumni affiliation. Eight of the 10 burials uncovered were in a tightly flexed position, another Wukchumni trait.

Analysis of artifacts at Slick Rock Village indicated the possible presence of two cultural components (Berryman and Elsasser 1966: 19-20). The earlier components was identified by large concave based obsidian points or knives, manos and metates, scrapers, and crude choppers. Artifacts identified as belonging to a later component paralleling the upper levels of the Greasy Creek site (discussed next) included Owens Valley brownware pottery, small triangular side-notched obsidian points (rare), Olivella disc beads, bone awls, steatite vessels, and steatite disc beads.

The Greasy Creek site was reported on by Pendergast and Meighan

(1959). Of the three sites excavated in the Terminus Reservoir area, this was the only one that evidenced any considerable time depth, with a stratified midden deposit.

Seven shallow circular housepits, with an average diameter of 31 ft., were recorded on the site's surface. Only two burials were found. The site's deepest strata revealed core choppers, scrapers, hammerstones, large obsidian projectile points or knives, and tubular bone beads, while the upper layers contained tubular clay pipes, steatite disc beads and vessels, bone awls, Owens Valley Brown Ware, and small obisidian and chalcedony projectile points.

No beginning date is postulated for this site, but the top 12 in. of deposit have been dated to around A.D. 1300 due to the presence of Owens Valley Brown Ware (Berryman and Elsasser 1966: 19).

Archeological excavations conducted by Jay von Werlhof from 1959-61 at Cobble Lodge revealed a large cemetery used by Indians from the surrounding area. Hale Tharp revealed to his nephew, Allen Vehrs, that the site had been occupied until 1860 when a smallpox epidemic destroyed the population (von Werlhof 1961: 1-2). Housepit groups were visible on the surface until 1930 when the area was plowed. Over 130 burials were uncovered with 502 artifacts. Although the site is attributed to the ancestors of the Wukchumni Yokuts, the presence of red ochre, possible use of wooden posts around burials, use of burnt clay as fill in burials, and flexed secondary burials in baskets are anomalous to what is known of Wukchumni practices (Berryman and Elsasser 1966).

Interpretation of the archeological data recovered from these three excavations indicates that ancestors of the Wokchumni Yokuts were the probable early inhabitants of the Terminus Reservoir region who wintered in this location and escaped summer's oppressive heat to the high mountains (Berryman and Elsasser 1966).

In his discussion of external relationships among the prehistoric inhabitants of the Buchanan Reservoir area, Moratto states "the overwhelming likeness of the Terminus assemblages to those of dated phases at Buchanan would suggest chronologic equivalences as well for the two localities" (Moratto 1972: 203).

Vermillion Valley

Vermillion Valley is a U-shaped, glaciated canyon in the High Sierra located some 65 mi. east of Fresno and 10 mi. west of the crest of the Sierra Nevada. Vermillion Valley is a site associated with the protohistoric Western Mono (Monache) situated at an elevation of 7,600 ft.

Excavation of one of the four housepits noted at this site by Lathrap and Shutler (1955) revealed the following artifacts:

1. Small projectile points; small, triangular, side-notched concave points; small triangular points lacking side notches; and corner-notched points.
2. Blades
3. Scrapers (by far most common artifact)
4. Steatite disc beads
5. Bedrock mortars
6. Manos
7. Owens Valley Brown Ware

Lathrop and Shutler (1955: 239) conclude that the site was occupied by the Western Mono possibly until A.D. 1850 and that Owens Valley Paiute may also have occasionally camped there to conduct trade. The house appeared to be a solidly built summer residence to which the inhabitants returned year after year.

Owens Valley

Information gathered as a result of numerous surface collections and the excavation of Iny-2 by Riddell and Riddell (1956) has shown Owens Valley Brown Ware to be a relatively recent introduction to the area due to the fact that in a site with a cultural deposit of 90 in., the pottery occurs only in the top 18 in. Survey data also indicates that steatite and pottery vessels were contemporaneous.

Resultant analysis from excavations conducted at the Rose Spring Site (Iny-372) enabled Lanning (1963) to suggest a five-phase cultural sequence based on diagnostic projectile points. D. Wren (1976: 16) has summarized this sequence as follows:

> Little Lake, with Pinto and Lake Mohave points; early Rose Spring, with Humbolt Concave Base A and Elko points; middle Rose Spring, with Elko points; late Rose Spring, with Eastgate and Cottonwood triangular points; and Cottonwood, with Cottonwood triangular points. These phases range between 3000 B.C. to protohistoric times. Humbolt Concave Base A points and Pinto points have radiocarbon dates from 1950 B.C. with Elko points associated with a time span of 500 B.C. to A.D. 500.

Chapter 6

THE CURRENT STATUS OF ARCHEOLOGICAL INVESTIGATIONS CONDUCTED IN SEQUOIA AND KINGS CANYON NATIONAL PARKS

Eight surveys have been carried out in Sequoia and Kings Canyon National Parks from 1959-79, recording a total of 129 prehistoric and historic sites.

The first two surveys, by Elsasser (1959) and Davis (1960), were conducted with the techniques of the time but do not provide maps of the surveyed areas, nor do they discuss survey techniques. Both surveys assumed that sites would be located near trails. Elsasser's survey was confined to the drainage of the south fork of the Kings River, and Davis' survey was conducted in Paradise Valley. For current management purposes, these two earlier surveys may be considered inadequate. However, they do serve a very useful purpose as references to be checked whenever conducting a survey in the same general area to establish if any known or suspected cultural resources are in the area. The other six surveys do include maps of surveyed areas and describe the survey techniques; therefore, the exact areas surveyed are known, and the level of intensity at which the area was surveyed may be discerned. These surveys do meet current archeological standards and are adequate for management purposes. However, these surveys are biased in that they are confined to development concept areas, trails, and valley floors. For archeological purposes, these biases must be kept in mind.

At most, .4 percent of the total area comprising the parks has been surveyed. This is hardly an adequate sample size from which to construct any meaningful archeological models.

Next there will be a discussion of the types of sites located in Sequoia and Kings Canyon followed by summaries of the individual surveys undertaken in the parks.

Temporary Camps

Of the 129 sites recorded in Sequoia and Kings Canyon, 41 percent (53) have been temporary campsites. Judging from information given on the site record forms, these sites are usually identified by a noticeable scatter of lithic debitage, tool fragments, and sometimes whole tools. These differ from the category "lithic scatters" in area and density, temporary camps being greater in both. These sites occur at elevations from 4,320 ft. to 11,300 ft. and are usually associated with trails. Because of their association with trails, they are thought to be the temporary camps of traders who, while conducting transmontane trade over the Sierras, camped in these locales sharpening or fashioning new tools for their more or less opportunistic hunts along the way. Another possible interpretation that has been postulated is that both man and game animals often used the same paths. Therefore, these sites represent more of temporary camps used by seasonal hunters rather than traders. Of course, neither explanation excludes the other.

Temporary camps are by far the most numerous type of archeological site encountered in Sequoia and Kings Canyon National Parks at high altitudes.

Bedrock mortar sites are fairly ubiquitous throughout the parks and have been reported in altitudes ranging from 1,600 ft. to 10,800 ft. They comprise 27 percent of the total number of sites located in the parks. Most of them occur in the ranges where various species of oak grow; however, the fact that they occur in many other habitats suggests that either other types of seed foods were also being processed or acorns were transported to higher elevations during the summer when seasonal habitation sites were repeatedly used for the exploitation of other resources not found in the lower elevations at that time of year. This theory was supported by Lathrop and Shutler (1955) in the Vermillion Valley.

Temporary camps associated with bedrock mortars comprise 8 percent of the total number of sites in the parks. These are merely bedrock mortar sites with other signs of activity, usually chipped stone, associated with them. I suspect that in any locality where enough time was spent to form mortars in a granite outcrop that a temporary (seasonal) camp was either located there or nearby. Of course, all occupational sites (defined as those having a midden of 6-in. depth or more) in the parks contain bedrock mortars.

There have been occupation sites (5 percent) noted in the park, occurring within a range of 2,100 to 6,950 ft. elevation. These sites were not permanently inhabited year round but rather were localities to which the residents returned to year after year. It is possible that some of the occupation sites were inhabited perennially (Hospital Rock and Potwisha Camp), but this has not yet been established. Sites in this category contain middens of 6 in. in depth or more and have bedrock mortars nearby. Since very few areas have been subsurface tested in the parks, it may be questioned as to whether or not middens of this depth exist at each of these localities. It has already been noted that Hospital Rock (TUL-24) and FRE-259 have been established as village sites and most likely Potwisha Camp was one also. The other four sites--FRE-235, TUL-60, TUL-61, and TUL-84, have not undergone sufficient investigation to confirm their status.

Lithic scatters, which comprise only 2 percent of the parks archeological sites so far, are usually small areas with a light amount of lithic debitage. These sites have been noted between 4,575 ft. and 7,040 ft. in elevation and may represent areas where hunters have rested and sharpened their tools.

Only two quarry workshops have been reported in the parks, both at high elevations--10,600 ft. and 11,800 ft. Obsidian was by far the favored lithic material for fashioning chipped stone implements, but basalt tools have also been noted. Apparently basalt was quarried in the High Sierra where obsidian was traded in.

Of the 19 (15 percent) historic sites located in the parks, 18 of these have been found in the Mineral King District, where much historic mining activity occurred.

Excavations have been limited to two sites in the park--TUL-24 and FRE-259. Both were village sites apparently occupied in late prehistoric to protohistoric times. Firm chronological control is lacking at both of these excavations, and dating may be regarded as tenuous.

Not enough chronological control has been established for the archeological sites discovered in the parks to really establish a settlement pattern analysis. Some broad statements may be made, however.

Firmly established occupation sites occur below 4[illegible] ft., and are located very close to perennial sources of water. Three other tentative occupation sites occur below 7,000 ft. and are located near perennial water sources. Bedrock mortar sites can be expected to occur up to 10,000 ft. but diminish in frequency with altitude. Temporary camps can occur almost at any altitude and are usually associated near trails.

The pattern of site locations in Sequoia and Kings Canyon National Parks tends to support the data from other localities in the southern Sierra Nevada. A similar pattern of site location exists in adjacent Sequoia and Sierra National Forests (Moffit and Tamez: personal communication). The lifeways of the early inhabitants of the parks seem to reflect a group of indigenous people who spent the greater part of the year at lower elevations (below 4,000 ft.) and practiced transhumance to the higher elevations during summer months for both subsistence and trading purposes.

Elsasser's Reconnaissance - 1959

Two weeks in August 1959 were spent by the University of California Archeological Survey, directed by A. B. Elsasser, in a reconnaissance survey of select areas in the parks. The survey concentrated on the drainage of the south fork of the Kings River with the most intensive efforts carried out in Zumwalt Meadow and along almost the entire length of Babbs Creek.

Using accumulated data from previous surveys conducted in the region by Bennyhoff, Lathrop, and Evanston, information offered by the Sierra Club, and results of his own reconnaissance survey, Elsasser listed a total of 78 sites in the survey forms attached to his report (Elsasser 1959).

Elsasser divides the sites into four categories:

1. Bedrock mortar sites; these are sites associated with bedrock mortars.
2. Petroglyph sites; these are sites associated with petroglyphs. Although no petroglyphs exist in Sequoia and Kings Canyon National Parks, pictographs do. Apparently there was some confusion between these two terms.
3. Temporary campsites; Bennyhoff's (1956) definition was used for this category of site; "a site where at least five obsidian chips or potsherds or one relatively complete, identifiable artifact, such as a finished pot or projectile point, has been found, would allow the place to qualify as a temporary campsite" (Elsasser 1959: 9).

4. Trail sites; these are sites associated with trails and are usually temporary campsites.

Results of Elsasser's Survey. Of the 78 sites reported in the site survey forms attached to his report 65 are listed by Elsasser as trail sites. The site numbers, general location, and associated trails may be found in table 1 of Elsasser (1959). Since this appears to be a catch-all category, and it seems very obvious that human movement is facilitated by the use of trails, these sites can be more usefully categorized by the other criteria used by Elsasser, namely temporary camps, bedrock mortars, temporary camps with associated bedrock mortars, pictographs, and occupation sites (with a midden depth greater than 6 in.). The following breakdown may be made.

Temporary Campsites

The vast majority of temporary campsites are identified by lithic scatters. Data on the area covered by the lithic scatter or the density of it is usually not available. Forty temporary campsites are reported ranging in elevation from 4,320 ft. to 11,300 ft.

Bedrock Mortar Sites

Fourteen bedrock mortar sites are listed occurring between 1,600 ft. and 10,800 ft. in elevation.

Temporary Campsites Associated with Bedrock Mortars

There are 10 temporary camp sites associated with bedrock mortars listed in Elsasser's site survey forms. These range in elevation from 2,500 ft. to 8,000 ft.

Occupation Sites

Of the six occupation sites noted by this survey, all are associated with bedrock mortars, and two (Tul-24, Hospital; Tul-28, Potwisha Camp) are associated with pictographs. The occupation sites are:

Fre-235	elevation 4,800 ft.
Tul-24	elevation 2,100 ft.
Tul-28	elevation 2,300 ft.
Tul-60*	elevation 6,600 ft.

Tul-61*	elevation 6,600 ft.
Tul-84	elevation 6,950 ft.

*may be same site

It is curious to find three occupation sites above 6,500 ft. However, the definition of this site type is based on depth of midden, and only one (Tul-24) has had any subsurface testing.

The remaining six sites discussed in Elsasser (1959) fall under disparate categories, but they are noted as follows:

Fre-78	pictographs	elevation 4,500 ft.
Tul-102	pictographs	elevation 7,400 ft.
Fre-271	pictographs, TC, BRN	elevation 5,000 ft.
Fre-102	quarry workshop	elevation 10,600 ft.
Iny-113	quarry workshop	elevation 11,800 ft.
Fre-289	pottery cache	elevation 5,700 ft.

Twenty-four of the sites recorded by Elsasser were not visited by the survey crew. Site forms used by the crew at that time were one page forms that recorded the minimal amount of information. Each site noted in the report (Elsasser 1959) is plotted on a map provided in the report. However, a map does not exist of the areas surveyed, and survey techniques are not discussed by the author.

Potsherds of Owens Valley Brown Ware, obsidian projectile points and blades, and one arrow straightener were collected during the survey. Elsasser (1959: 19-20) notes the similarities of the obsidian specimen with those of the Crane Flat and Tamarack complexes at Yosemite which are thought to be earlier than the period represented at Sequoia National Park; however, these point and blade types occur on the surface at Yosemite also. The introduction of Owens Valley Brown Ware to the region is assumed to have occurred around A.D. 1400 (Elsasser 1959: 19), while the arrow straightener resembles the ethnographic specimen for the Western Mono.

In 1960 a three-day survey of Paradise Valley was conducted by J. T. Davis. The assumption used during this survey was that temporary campsites might be discovered along the present-day trail between the confluence of Bubbs Creek and the south fork of Kings River, and the junction of the latter and Woods Creek (Davis 1960: 17). Seven additional sites were located during this survey; all were temporary campsites, one with associated bedrock mortar, and their location ranged from 4,600 ft. to 11,300 ft. elevation. Four of the sites (Fre-316 to 319) were indeed correlated with trails which may be noted in table 4 of Davis (1960).

The same single page site survey form was utilized, maps of either the site locations or of the surveyed area are not provided, and survey techniques are not described. Legal descriptions of site locations are provided on the survey forms attached to the report (Davis 1960).

Ten years passed before the next survey in Sequoia and Kings Canyon National Parks was conducted. Between August 23-27, a reconnaissance survey of the Mineral King District was undertaken by a crew of students from Fresno State College, directed by C. H. Jennings and Patricia Kisling. The survey was conducted by the U. S. Forest Service as that area was then under its jurisdiction. The principal area surveyed was between Silver City on the east and Aspen Flat at the mouth of Farwell Canyon on the west, along the valley floor. Twelve archeological sites were located and designated with Fresno State College Archeological Survey numbers, FSC 65-76. The authors categorize the sites in the following manner (Jennings and Kisling 1971: 8-20):

Prehistoric Sites

Bedrock Mortar Sites

FSC-65	elevation 7,504 ft.
FSC-69	elevation 7,540 ft.
FSC-75	elevation 7,480 ft.
FSC-76	elevation 7,480 ft.
FSC-67	elevation 6,720 ft.
FSC-71	elevation 6,400 ft.

Midden was defined at five of these sites on the basis of dark soil. Three of the sites had artifacts on the surface that included obsidian projectile points and flakes, basalt flakes, a mano fragment, and various historic artifacts, mainly of glass.

Boulder Mortar Site

FSC-68	elevation 7,830 ft.
FSC-72	elevation 7,830 ft.
FSC-70	elevation 7,340 ft.

No artifacts were located on the surface of these sites.

Unclassified

FSC-73	elevation 7,440 ft.

This site consists of three obsidian waste flakes.

Historic Sites

FSC-66 elevation 8,000 ft.

This site consists of five wooden features, which are the remains of various structures dating post-1920.

FSC-74 elevation 7,360 ft.

This site is a ruined wagon frame.

A map is provided detailing the location of the sites found and delineating the boundary of the area surveyed. Survey techniques are not mentioned, and site survey forms are not provided in the report (Jennings and Kisling 1971).

Three development concept plan areas--Cedar Grove, Giant Forest-Lodgepole Complex, and the Grant Grove Development--were surveyed in October 1974 by California State College, Stanislaus, Institute for Archeological Research, with L. Kyle Napton the principal investigator and A. D. Albee the field supervisor.

Fifteen separate areas, totaling over 300 acres, were surveyed utilizing 49.5 man-hours in the Cedar Grove area. Three archeological sites that had not been previously noted were recorded:

4-FRE-533	bedrock mortar site	elevation 5,030 ft.
4-FRE-534	obsidian debitage	elevation 4,575 ft.
4-FRE-535	bedrock mortar site	elevation 4,570 ft.

A detailed map of surveyed areas is provided, and the survey techniques are described. The survey party covered all areas totally, where possible, utilizing transects and spacing crew members 30 m apart. Area 8, the existing government corral and domitory area, was not intensively surveyed due to the ambiquity of the survey area as indicated on the survey map. Site 4-FRE-235 exists in the area, and the authors recommended that this site be tested for subsurface materials (Napton, Albee, and Greathouse 1974: 7). Area 14, possible use site, was not surveyed because it was crossed out on the map, and, therefore, assumed that survey was no longer necessary for this area.

The Giant Forest/Lodgepole Complex area was surveyed between October 20-24, 1974, by three survey crew members and the field supervisor, A. D. Albee. The area surveyed is described in detail (Napton, Albee, and Greathouse 1974); however, no map of this area is provided. Survey techniques are discussed at length using transects, spacing at 33-m intervals, and approaching 100 percent covereage of the area. One archeological site, 4-TUL-365, was located at Wolverton Meadow. This site consists of three bedrock mortar cups on a single outcrop.

The same survey party surveyed the Grant Grove development area between October 14-18, 1974. Again, the survey techniques are explicitly stated and the survey area nicely described, but no map is provided. Three archeological sites were recorded during this survey:

4-FRE-111	bedrock mortar site	elevation 6,480 ft.
4-FRE-536	bedrock mortar site	elevation 6,560 ft.
4-FRE-357	bedrock mortar site	elevation 6,560 ft.

To recapitulate then, intensive surveys were carried out in October 1974 of three development concept plan areas in Sequoia and Kings Canyon National Parks. The survey techniques are explicitly stated, but two of the areas are not illustrated with maps. The site forms used are an improvement over the one employed by Elsasser and Davis. A sketch map is provided for each site, UTMG coordinates are provided, and many of the sites were photographed. A total of six additional sites were recorded. One site, 4-FRE-111, was previously recorded by Bennyhoff in 1954. Five of the sites recorded were bedrock mortar sites; the sixth was a temporary campsite. All sites occur within a range of between 4,570 ft. and 7,240 ft. in elevation.

Yvonne Stewart, David Groenfeldt, and Susan Purves conducted archeological surveys of several proposed development areas in Sequoia and Kings Canyon National Parks from September 15-26, 1975. During this survey, three unrecorded sites were located, and six sites noted by Elsasser in 1959 were rerecorded. Survey methods for all areas surveyed are given, areas surveyed and site locations are furnished on 1:62,500 scale maps, and sites are recorded on nine page site forms. Areas surveyed include Wolverton Corrals/Giant Forest staging area, Giant Forest transportation route, Wolverton ski area, Clover Creek campground, Red Fir spray field, Giant Grove/Dark Canyon spray field, Giant Grove utility line, and Redwood Canyon. Approximately 810 acres were surveyed in 30 man-days.

Archeological clearance was not granted for the proposed Red Fir spray field or the Giant Forest transportation route. The authors also note that additional survey work is required in Redwood Canyon and along the proposed Giant Forest transportation route. Various sites have been reported by park employees in unsurveyed meadow areas that should be also recorded. A recommendation is made to nominate site clusters throughout the park to the National Register of Historic Places as archeological districts (Purves 1975: 17).

The three newly located sites of this survey are the Hart Trail site, the Groenfeldt site, and the Green Giant site. The Hart Trail site consists of five bedrock mortar cups on a single granite outcrop, with no midden present, located at 6,000 ft. elevation. The Groenfeldt site exists at 6,400 ft. elevation and is a bedrock mortar cluster, with 12 cups and 2 pestles located under a large boulder rockshelter. No lithic material or midden could be detected. Existing at 7,040 ft. elevation is the Green Giant site, which consists of two cobble tools of green igneous rock.

In the same year, M. T. Morehead, H. Yamashita, and A. Brereton performed an intensive survey of the Mineral King Valley from the end-of-the-road parking lot to Farewell Canyon (Morehead 1975). All areas level enough to walk were given 100 percent coverage on foot. Areas covered were the entire Mineral King Valley from Farewell Canyon to the west side of the Mineral King settlement, the Silver City/Cabin Cove area, the Camp Conifer area, Redwood Creek, Squirrel Creek, Crunigan Creek, Oak Grove, and Red Hill which together comprised more than 600 acres.

Not only were survey techniques noted but research biases were also. Morehead assumed that a prehistoric trail in the area would have followed the same course as the present road; therefore, sites were anticipated at major cross drainages and relatively flat expanses (Morehead 1975: 5). Also, large habitation sites were not expected because of the topography, seasonal campsites were expected in the lower elevations where oak was plentiful, and smaller, temporary campsites were anticipated for the higher regions.

Five additional archeological sites were discovered, one of which was noted by Elsasser in 1959, but his crew had not actually visited the site. A brief description of the sites located by the survey is as follows:

TUL-332 (Elsasser 1959)	bedrock mortar site	elevation 7,504 ft.
TUL-359	bedrock mortar site	elevation 3,200 ft.
TUL-359	bedrock mortar site	elevation 3,040 ft.

TUL-360	occupation, bedrock mortar site	elevation 2,720 ft.
TUL-361	bedrock mortar site	elevation 1,920 ft.

TUL-332 and 260, located in Oak Grove, cover several acres each and contain over 100 bedrock mortar cups in 16 groups. TUL-358 is located at one of the cross drainages, Squirrel Creek, and consists of 11 bedrock mortar cups, with a possible midden. TUL-359 contains three bedrock mortar cups. Lastly, TUL-361 is located in the hilly grassland of the Red Hill area and consists of 10 bedrock mortar cups, with a number of pestles, manos, and a few obsidian flakes nearby.

Recommendations made by Morehead include nominating the site to the National Register of Historic Places and preserving the sites located in the Oak Grove area.

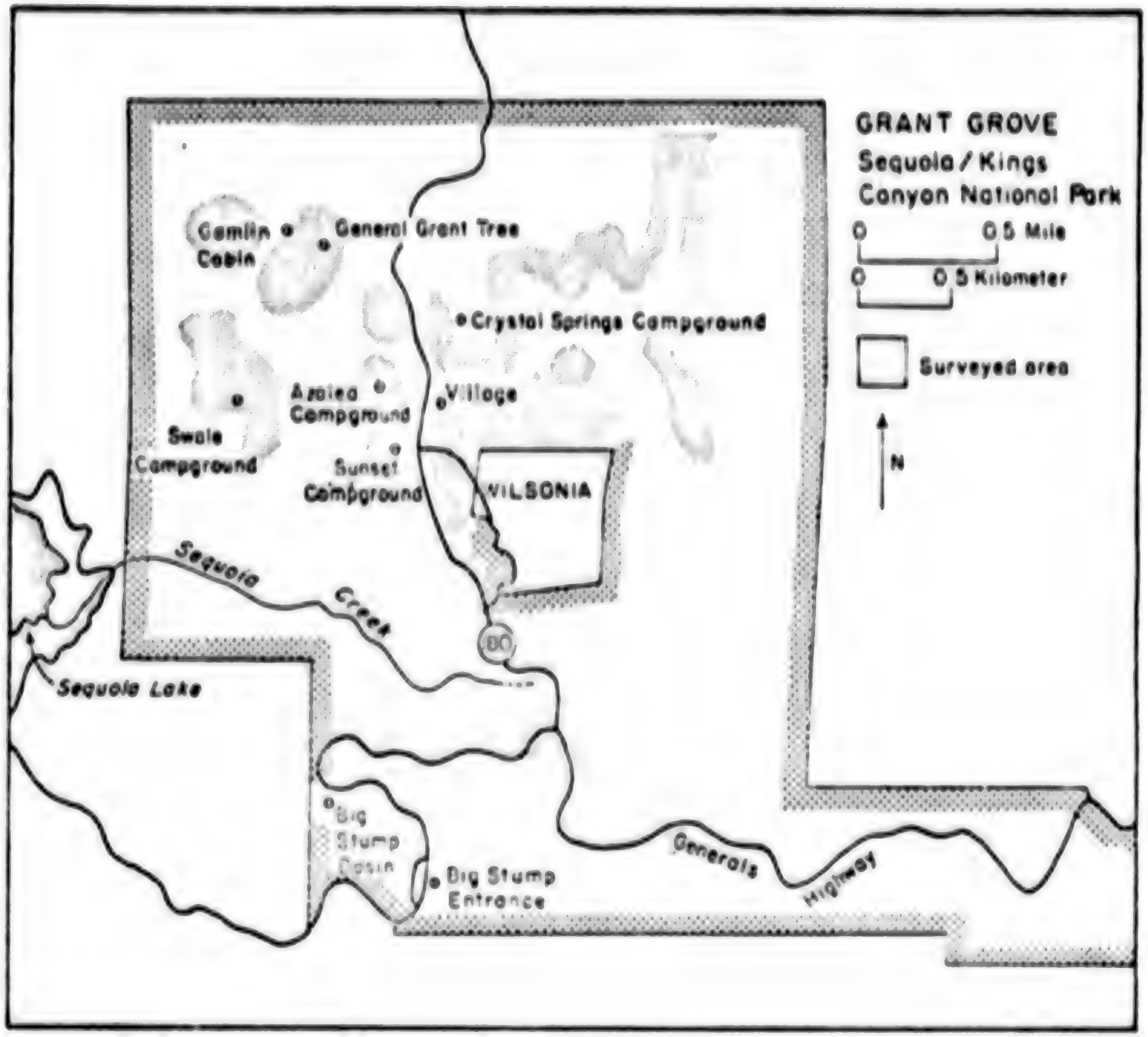
Kathy Moffitt and Linda Popelish surveyed development concept plan areas in Grant Grove from August 3-19, 1976 (see maps 4a-b). Survey techniques were adjusted to the topography to ensure intensive coverage of areas with poor visibility. Typically, north-south or east-west transects spaced at 50-ft. intervals were employed. Areas surveyed included the Big Stump entrance station and parking area, the Wye, an existing sewage spray field between North Grove and General Grant Grove, sections of General Grant Grove in the region of General Grant Tree, development areas surrounding the abandoned incinerator north of the corral along Highway 180, a proposed spray field and sewage treatment plant west of Swale Campground, Swale Campground, Azalea Campground, Sunset Campground, Crystal Springs Campground, a proposed upgrading of the water supply facility in Round Meadow, Panoramic Point and Park Ridge Lookout roads, Panoramic Point parking area, proposed overlook facilities on Park Ridge, Camp Grove Village, lodging and maintenance areas, Redwood Saddle Road, and Redwood Canyon Trail.

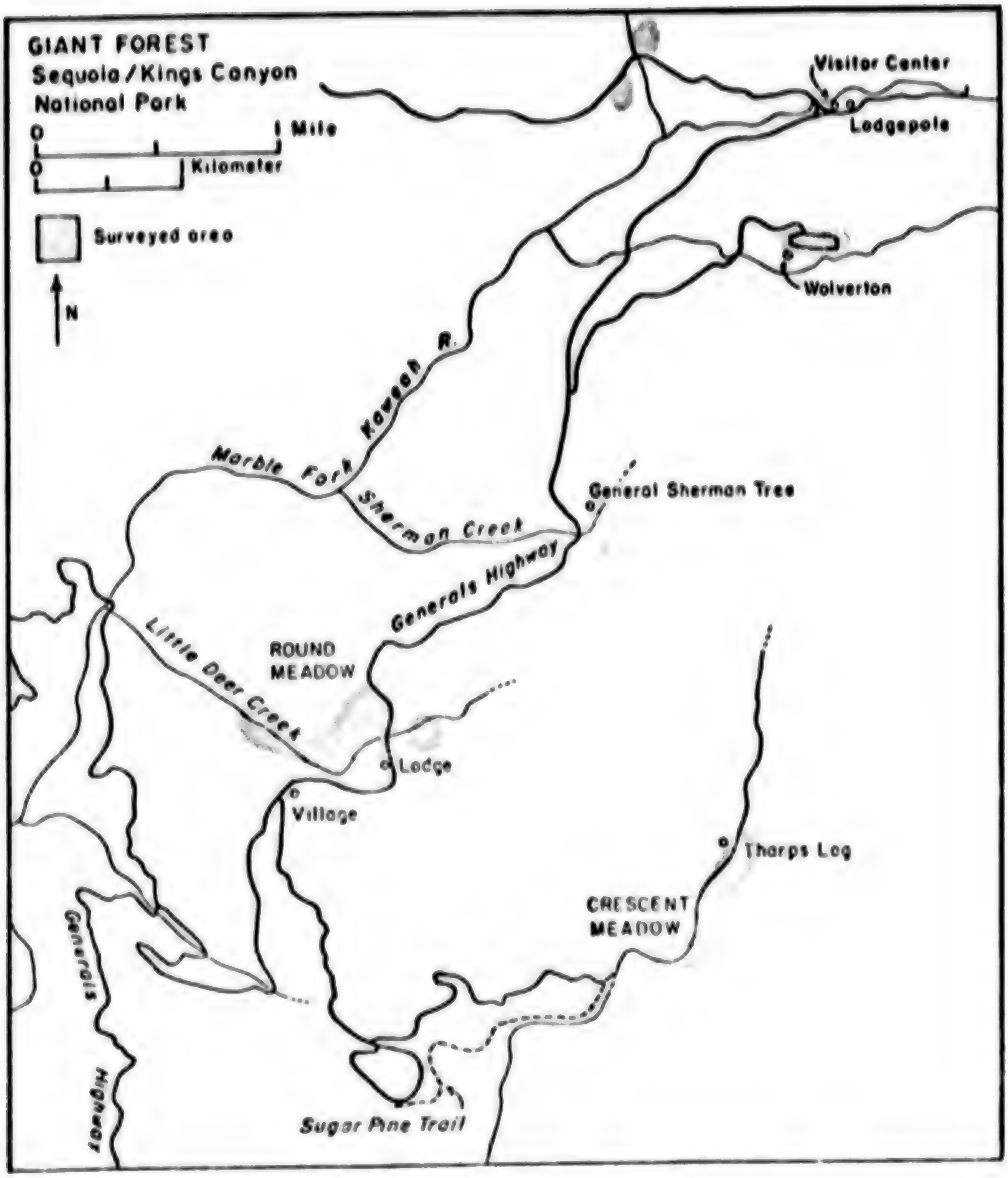
In total, 440 acres were investigated using 30 man-days. Two previously unrecorded sites were located: GG-DCP76-1, the Wye site, is a historic log structure; GG-DCP76-2 is a bedrock mortar site with a possible midden. The nine-page California State College, Stanislaus site survey form was used, and clear, accurate maps depicting areas surveyed and site locations are provided (Popelish 1976).

Moffitt and Popelish made the following recommendations:

1. Any developmental action in areas where ground surface is ob-

Map 4a. Development Concept Plan areas surveyed in Grant Grove.





Map 4b. Development Concept Plan areas surveyed in Giant Forest.

scured by forest duff or other obstacles should be monitored by an archeologist.

2. Monitoring by archeologists of projects in areas where they were poorly delineated on maps will be necessary.
3. If any sites are located during a project, an archeologist must be informed.

Most recently a reconnaissance survey by Kamp, Whittaker, and Danziger was carried out in the Mineral King District (Kamp and Whittaker 1979). All the major trails in Mineral King were covered, except Hockett Meadow Trail, and portions of most of the major water courses were visited. Only two prehistoric sites were encountered: SEKI 79A-9, a bedrock mortar site, with no artifacts or midden; and SEKI 79A-12, four lithic artifacts, one being a fragment of a Desert Side-notched point that was in use between AD 1350 and AD 1850 in the area (Kamp and Whittaker 1979: 20). A total of 16 historic sites were discovered which mostly were associated with historic mining in the area. Accurate maps of sites located and areas surveyed are provided.

Kamp and Whittaker make a good argument against determining prehistoric middens by soil color alone and also recommend that Elsasser's purported sites be verified. The authors note that most prehistoric sites in the region are bedrock mortars, with a few lithic artifacts that are all located in the main valley near the Kaweah River on relatively flat areas with good bedrock outcrops. There is no evidence of an early prehistoric occupation of Mineral King.

The Empire Mine and Mill site, the New England Smelter site, the possible early sites at SEKI 79A-3, and the White Chief sites are all recommended for nomination to the National Register of Historic Places.

Excavations

In 1960 extensive test excavations were executed at Hospital Rock (TUL-24) by an archeological crew from the College of the Sequoias led by Jay von Werlhof (1960).

Hospital Rock was a village site attributed to the Potwisha group of the Monache. The site has long been known for its extensive pictographs on the south facing of Hospital Rock, but the site also contains numerous bedrock mortars, an extensive midden deposit, and several housepit depressions (8-ft. diameter).

Portions of the midden, rockshelter, and six housepit depressions were excavated by arbitrary 6-in. levels, and all excavated material was screened through ¼-in. mesh screen.

On the basis of these test excavations, von Werlhof proposed a three-phase cultural sequence (von Werlhof 1960: 47-51).

The Early Phase consists of levels 12-9 (72"-48"). Level 9 reflects a transitional period between the Early and Middle Phases. This phase is characterized by a food gathering and milling subsistence pattern. Evidence of occupation is scanty, with only a few hearth stones and firepits represented. Obsidian exists, but pottery is lacking from the phase. It is stated by von Werlhof that obsidian and pottery were introduced simultaneously into this region ca A.D. 1300-1400 and, therefore, this phase of the site can be no older than these dates. However, this conclusion is not substantiated in the literature. Due to the presence of obsidian and lack of pottery, it is assumed that the site at the time was primarily a supply point for a group inhabiting another site--probably TUL-28, Potwisha Camp, to the west. Manos and metates exist in these levels, and the use of bedrock mortars is also assumed for this phase. It is concluded that meal from the harvest was processed at this central gathering point. The base and upper midsection of an obsidian tool was extracted from level 9, which is interpreted as being either a large projectile point or a knife.

The Middle Phase is represented by two levels, 8 and 7 (48"-36"). At this time, represented by artifacts exhumed from these levels, the site appears to have been almost exclusively used as a hunting trap. According to von Werlhof (1960: 49), this is also the time that the pictographs were painted because they were assumed to be associated with hunting. The occupational features discerned from the Early Phase are thought to have not been used in the Middle Phase. The Middle Phase exhibits more use of chipped stone implements and less use of ground stone.

The Late Phase is represented in levels 6-1 (36"-0") and includes the point of historical contact. The main village that created the midden behind Hospital Rock was initiated at the beginning of this phase and grew until level 2, at which time a rapid decline in activity and occupation is noted.

The village, begun directly behind Hospital Rock, grew over the central portions of the midden area. Then, new housepits were located on the west portions of the mound, and, finally, all parts of the knoll were covered with habitation units before the inception of the decline.

In summary, the site apparently first became occupied by inhabitants of a larger village to the west as a place to seasonally gather plants sometime between A.D. 1300-1400. This was followed by a relatively brief period when the site was mainly used for hunting. Finally, an extension occupation began, perhaps by offshoots of the populations to the west, until a rapid decline occurred sometime during the historic period.

No carbon-14 dates were obtained from this site, and the initial occupation date (A.D. 1300-1400) may be regarded as tentative at best.

It is von Werlhof's opinion (1960: 46) that the occupation at Hospital Rock as a village site was the culmination of a movement that had begun downstream.

Another site was excavated in 1960 in Kings Canyon National Park. J. T. Davis, along with J. Sanchez and L. Feldhammer, conducted extensive test excavations at site FRE-259, located 450 yards north of the south fork of the Kings River at an elevation of 5,000 ft.

Excavations were limited to 5 ft.^{2} testpits, chosen for their likelihood to produce cultural remains.

The site consists of two bedrock mortar outcrops, with a total of 16 mortar cups and a relatively extensive midden (30" deep) located 150 ft. from a perennial spring. Using Bennyhoff's (1956) classification of prehistoric sites according to the number of associated bedrock mortar holes, Davis found this site to be classed as a small village, perhaps comprised of several familites (Davis 1960: 7).

Excavation of the 5' x 5' squares proceeded in 6-in. arbitrary levels, and all material was screened through ¼-in. mesh screen. Artifacts obtained by this method included pestles, metates, manos, 23 obsidian projectile points, 2 sherds of steatite, a basalt drill, 5 basalt choppers, hammerstones, pecking stones, and a variety of osteological remains. The onsite floral assemblage was also recorded.

Comparisons between data accumulated from this site and data obtained by Bennyhoff in Yosemite has led Davis to conclude that site FRE-259 falls somewhat intermediate between the Mariposa Complex and the earlier Tamarack Complex, i.e. A.D. 1200-1800.

Conflicting with von Werlhof's view (1960: 48), Davis cites sources stating that Owens Valley Brown Ware did not enter the region until A.D. 1750 (Davis 1960: 16). Since no Owens Valley Brown Ware was found at FRE-259, Davis concludes that the site was abandoned before that time. Also, a Desert Side-notched point, believed to have entered the area around A.D. 1450, was located several inches above sterile soil, giving a beginning date for this site of A.D. 1350. Thus, a tentative occupation span between A.D. 1350-1750 is purported by Davis.

Again, no C^{14} dates were obtained for the site, and dating may be regarded as tenuous.

As a result of proposed restroom facilities at Potwisha Camp, Hospital Rock, and Buckeye Flat, test excavations were carried out in the trash areas for the piping and at the areas where the restroom facilities would be located. Only a single obsidian debitage flake was located during the investigation (von Werlhof 1961).

Chapter 7

RECOMMENDATIONS FOR FUTURE RESEARCH

As stated in the introduction, several pieces of legislation mandate the management and protection of cultural resources on federal land. These laws were brought about as a result of many years of concern voiced by conscientious citizens and legislators who were cognizant of the increasing destruction of cultural resources caused by carelessness and an ever widening illegal antiquities market and the concomitant loss of information to the scientific community. It is not the intent of these laws not to protect these resources as merely a rote exercise adding a burden to our federal budget, but to protect, preserve, enhance, and secure the scientific information that these resources provide. Archeological surveys that merely locate cultural resources are not in compliance with the laws, do not serve the public, and do not recover useful data for the scientific community. It is for this reason that the following recommendations are made:

1. All archeological research in the parks, whether survey or excavation, should be problem-oriented research to allow for accurate site evaluation, significance determination, and data recovery. Without this we are not fulfilling the intent of the laws. Problems concerning settlement patterns, cultural history, or methodological problems concerning survey techniques, sampling procedures, etc., are all realms in which this research could be integrated.

   One such problem domain concerning archeological theory was briefly summarized at the end of chapter 2. Testing of the cultural change/environmental change theory presented by Moratto, King, and Woolfendon (1978) would certainly be appropriate for archeological investigations conducted in Sequoia and Kings Canyon National Parks.

2. An archeological subsurface testing program of all site types in various environmental zones is recommended. This will enable us to determine the exact nature and significance of the resources and better assess impacts caused by development, use, and construction. Without knowing if there is any cultural

depth to a site or the materials present, we are not in a good position to determine impacts. A chronology concerning the cultural development within the parks is entirely lacking. A program of subsurface testing would increase our understanding of the culture history and settlement pattern of the indigenous peoples of the parks.

3. A general research design for all future archeological work conducted in the parks should be developed. This would facilitate all future work while increasing the information return from it. The research design should be constructed in stages to allow for flexibility, and coincide with the overall management plan for the parks. A sampling strategy, for future survey work and subsurface testing, should be part of the research design.
4. A blanket survey of all future proposed development areas should be conducted. This will eliminate the process of sending out an archeological crew every time a new project is conceived. Blanket surveys are much more cost-efficient and provide much more information. When a new project is proposed in an area that has been covered in a blanket survey, a base map and other records can be consulted to see if the project will interfere with any archeological remains. The convenience for management purposes is obvious.
5. Elsasser's (1959) and Davis' (1960) surveys should be regarded as very useful source information and should be consulted before undertaking a survey in the parks but should not be regarded as adequate for management purposes.
6. Management recommendations proposed by the six other surveys in the park should be reevaluated in light of current circumstances. Sites that were recommended for nomination to the National Register of Historic Places should be evaluated in terms of those criteria and nominated if deemed worthy. Sites recommended for subsurface testing should be considered for incorporation into the general subsurface testing program.
7. All sites should be given official California site numbers. Many surveys recorded sites with field numbers and have not

given them official site numbers. This should be kept up-to-date.

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